Will *Video Kill the Radio Star*[*]?
Visual Learning and the Use of Display Technology in the Law School Classroom

By Fred Galves[**]

Technology in the classroom is not only here to stay, its utilization will continue to grow and is likely over time to become the dominate method for delivery of higher education.

– Professor Mary Kay Kane, Past President, AALS [3]

INTRODUCTION

In her inaugural speech as the 2001 President of the Association of American Law

Schools, Professor Mary Kay Kane urged that "faculty members and law schools take the

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[*] This phraseology is borrowed from the 1979 pop song "*Video Killed the Radio Star*," performed by "The Buggles," which is a song acknowledging the power of the then new visual medium of music videos and music television ("MTV"). As one of the very first music videos, the song questions whether music videos played on MTV would destroy the music stars of the sound-only medium of radio. Of course, this dire prediction never actually transpired, as MTV actually increased the sales of the pop music industry. *See* Laura Landro, *Business Abstracts,* THE WALL STREET JOURNAL, Nov. 19, 1982, at 33 (noting that while record sales had declined since 1978, album sales of artists aired on MTV increased by 15% to 20%)*; see also* Frank Young, *Are You a Walking Advertisement*, L. A. TIMES, Dec. 28, 1992, at B-4 (proposing that certain MTV shows are aired "strictly" for the purpose of increasing CD and audio cassette sales). Music television also made it possible for singer/musicians to enhance their art and further communicate with their fans. *See generally* Jay Cocks, *Sing a Song of Seeing*, TIME, Dec. 26, 1983, at 54 (quoting Billy Joel, an MTV pioneer, whose music videos were considered "elaborate and effective," as saying that "the musician in me really resents having to interpret my music into something visual, but the thing that out-weighs all of that is that video is a form of communication. Why not use every means of communication available?"). For a music sampling of *Video Killed the Radio Star*, click here.

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[3] Mary Kay Kane, *President's Address: Technology and Faculty Responsibilities*, ASS'N. OF AM. L. SCH. NEWS., Apr. 2001, at 1, 2 (reporting the key premise of a higher education conference she attended in her capacity as president of the Association of American Law School (AALS) and written in an effort to "spur introspection" among law faculty). The American Association of Higher Education sponsored the conference she attended and the focus was on the use of technology in the classroom. *Id.*

opportunity . . . to reflect on our teaching and scholarly missions and how we might or should

alter or adapt them to ensure that we will be able to meet the challenges of the new century."[4]

She went on to state, "[w]ith the new generation of students embracing every aspect of

technology and demanding modernized learning environments in their universities . . . the

reliance on technology seems inevitable. But what does that mean?"[5] This article addresses the

value and shortcomings of display technology and visual learning in the law school classroom.

In Part I, I demonstrate that visually enhanced communication is a pervasive and ever-

growing phenomenon: (1) in society at large, (2) in education at all levels, (3) in the practice of

law, and finally (4) in the law school classroom, if our law school classrooms are to reflect 21st

Century technological reality. Because teaching with display technology is happening at all

levels of education, and its usage will continue to grow,[6] law students will come to *expect* the

use of display technology in their law school classrooms.[7] This is not to propose that *all* law

professors should exchange their lecture notes and chalkboards for multi-media technological

exposition in the classroom. However, perhaps more law professors should teach law in a

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[4]   *Id.* at 1; *see also* Mary Kay Kane, *President's Address: Recommitting to Teaching and Scholarship*, ASS'N OF AM. L. SCH. NEWS., Feb. 2001, at 5 (commenting that ". . . we need to engage in self-examination so that we can assess how we can bring the technological advances to bear most effectively in ways that enhance what we do in the classroom . . ."). Professor Kane is now the Dean of UC Hastings Law School. This subject also was the subject of a special recent workshop at the January3-6, 2004 AALS, *Workshop on Technology and Pedagogy: Teaching the Digital Age Student*."

[5]   Kane, *supra* note 3, at 2.

[6]   *See* Part I. B. The Present and Future Growth of Display Technology in Education Generally, *infra*. *See also* www. glef.org (describing model teaching practices in public K-12 education).

[7]   At a certain point in the future, if display technology is *not* used, law students might expect an explanation as to why it is not being used in their sophisticated (and often very expensive) law classes, especially if it has been pervasive in their K-12 and undergraduate classes. *See* Part I. D, *infra*.

manner that is familiar to the way in which law students increasingly are accustomed to

receiving information in society, at home, and at school –- through visualtechnology. [8] Also, by

using visual technology, law professors can teach law students in the same manner that many

modern trial attorneys present their cases in court to juries and other legal decision makers in

various settings.[9]

In Part II, I explain why and how I have incorporated display technology in my teaching.

I always have believed that the combination of visual and aural (sound) communication is more

effective than mere aural communication; research has revealed that the two avenues of sight

and sound *together* allow greater sensory access to the brain than the singular avenue of

transmission of sound – providing only verbal cues to a listener.[10] With this in mind, I begin my

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[8] *See* Part I, *infra*, citing various sources supporting the notion that with every passing year, law students are becoming more accustomed to receiving complex visual information, not only in education, but in their daily lives.

[9] By "other legal decision-makers in various settings," I mean (in addition to jurors in a courtroom) judges in bench trials or appellate proceedings, third-party neutrals in alternative dispute resolution settings (e.g., mediators, facilitators, arbitrators, advisory juries, etc.), opposing counsel and litigants in settlement negotiations, administrative law judges in agency actions, opposing parties to a contract, participants in mergers and acquisitions, etc. So the usage of technology by lawyers goes far beyond attempting to persuade jurors in court. In fact, the use of display technology by attorneys is as limitless as the practice of law itself whenever such legal work involves an attorney's need for effective presentation, explanation, communication and/or persuasion.

[10] *See* Fred Galves, *Where the Not-So-Wild Things Are: Computers in the Courtroom, The Federal Rules of Evidence, and the Need for Institutional Reform and More Judicial Acceptance*, 13 HARV. J. L. & TECH. 161, 186 (2000) ("This is true because verbal communication is not the primary method by which human beings gather information—sight is."); *see also id.* at 190 n.79 (citing Charles C. Schroeder, *New Students—New Learning Styles; College Students*, CHANGE, Sept. 1993, at 21) (finding that seventy-five percent of the public learns and solves problems best through sensory or concrete learning devices, such as visual simulations); Vincent R. Johnson, *Audiovisual Enhancement of Classroom Teaching: A Primer for Law Professors*, 37 J. LEGAL EDUC. 97, 100 (1987) (noting that "…empirical studies have demonstrated that the significance of the sense of sight in the process of learning is 85 percent, while the significance of the sense of hearing is only ten percent and the remaining sense only five percent"); *see also id.* at 190-91 (explaining that the average person absorbs and understands more when information is perceived with two senses (sight and hearing) instead of only one sense (hearing)); *see also* William C. Costopoulous, *Persuasion in the Courtroom*, 10 DUQ. L. REV. 384, 406 (1972) (presenting similar study results that find that humans accomplish eighty-five percent of their learning through visual sign, while hearing and all other senses account for only ten and five percent respectively).

teaching career by using the chalkboard to deliver information visually and help clarify difficult

concepts. I later created class handouts, such as complex diagrams and flow charts, because

they were more legible than my chalkboard diagrams and I wasted less classroom time drawing

and/or writing on the board. Using handouts allowed me to transmit very detailed information;

and because they were stored as computer documents, I did not lose them to the eraser after each

class, as I could reuse them or build upon them for future classes. I then moved from class

handout distributions to display technology – Microsoft PowerPoint software and a computer

projector displaying images on a large screen behind me in the classroom[11] – which allows me

to control and manipulate those diagrams during class along with text from various statutes,

rules, provisions and cases, to make multiple points and respond to student questions. By using

computer-generated images, I now can transmit information and posit complex factual

hypotheticals in a much more efficient and effective manner than I had previously been able to

do.[12]

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[11]   Part II also discusses various hardware and software options when using display technology.

[12]   Although I periodically distributed elaborate flow charts, I currently do not distribute hard copies of my computer images to the students because I believe there is a great learning benefit when students are required to see/read/interpret information and then write it out for themselves, rather than just passively receiving information already written and laid out for them in a handout. *See* Kenneth A. Kiewra, *Notetaking and Review: The Research and Its Implications*, 16 INSTRUCTIONAL Sci. 233, 234 (1987) (finding that writing down concepts through note taking "increases attention during the lecture and facilitates encoding of lecture ideas into long term memory"). *See also* Harry Kay, *Learning and Retaining Verbal Material*, 44 BRIT. J. PSYCHOLOGY 81, 81-100 (1955) (finding that a student is "more likely to remember what she records than assertions produced by others"). *See also* Richard Roe, *Valuing Student Speech: The Work of the Schools as Conceptual Development*, 79 CAL. L. REV. 1269, 1299 (1991) ("Students learn by working with ideas, attempting to fit them into their cognitive structures, and reformulating those structures as necessary.")   Also, a side benefit of moving from handouts to display technology is the cost savings of paper (and the environmental savings of trees). Despite my rather illegible chalkboard writing, I still use the chalkboard for spontaneity and added flexibility, such as listing or diagramming a student's comment or when I want a particular diagram or important text passage to remain up on the board for the entire class for added emphasis or frequent referral. For a complete discussion, s*ee* Part II, *infra*. Also, for a further discussion on the use of providing printed copies of computer images as handouts, see Part III.B.5, *infra*.

In Part III, I begin with the general notion that almost every new technological development in teaching history has received some sort of pedagogical criticism, often based on an initial fear of a replacement of the teacher, as well as a general lack of knowledge and/or familiarity regarding the new technology. However, most of those feared detrimental effects never materialized. Indeed, those concerns often were forgotten or the new technology was absorbed into teaching in various forms. With respect to computer display technology in the classroom, because history is again likely to repeat itself, display technology should not be feared as a modern replacement of the teacher, but instead should be accepted as a natural step in the inevitable evolution of classroom teaching. Thus, like the chalkboard itself, display technology is just another helpful classroom teaching tool and teaching option.

Although history will likely repeat itself with respect to display technology in the classroom, Part III considers various pedagogical criticisms of using this kind of classroom technology. The criticisms can be summarized by five questions: (1) Is the use of display technology nothing more than an oversimplification or "dumbing-down" of the law school classroom experience in order to meet today's students who, with extensive experience in receiving visual stimuli (T.V., video games, etc.), have suffered an unfortunate decrease in their attention spans and in the their ability to think critically? (2) Does display technology stifle intellectual spontaneity by shutting down a student's and the professor's desire to explore unpredictable academic tangents during class? (3) Does class become more of a showcase for technology than a real learning experience? (4) Do the classroom dynamics of a good Socratic "give-and-take" dialogue suffer due to the professor's inflexible class agenda where the expected "answer" is already up, or just about to appear, on the screen? (5) Is using display

technology simply "electronic spoon-feeding" where the professor is reduced to a boring "information-giver," shoveling out the information through slides, while the students become inactive, "information-receivers" who copy the images without really ingesting the material or developing analytical skills in the process?   In addition to presenting responses to these questions, I discuss ways either to avoid or at least to ameliorate such problems.

Finally, I conclude by advocating that display technology in the classroom should not be feared or loathed as if it were some evil, revolutionary scheme to overthrow the professor's important pedagogical role in the classroom. Instead, display technology is a useful classroom *tool* for the professor, and as such, it cannot, by itself, turn a professor into either a particularly *good* professor or a particularly *bad* professor. Thus, similar to a microphone, display technology simply *amplifies* whatever a professor's pre-existing good or bad teaching skills and personality may be and makes whatever is being taught more accessible to students. Accordingly, the potential pitfalls addressed in Part III are, in reality, allfunctions of ineffective teaching techniques, rather than some inherent pedagogical failure of display technology. As such, display technology simply conveys in a clear manner whatever a professor is doing well, or not so well, in the classroom -- but display technology is not responsible for the pedagogy, the professor is. Hence, video will not kill the radio star.

A lesson from educational history is applicable here. Stone tablets and even books were at one time seen as exciting new technological instruments to convey information through the written word beyond the oral traditions of the original Socratic dialogues of ancient teachers; but the fear that tablets or books would someday *completely* replace teachers (because one could simply read all of what teachers had to say and therefore would never have to listen to them live

in a classroom) never transpired.[13] Instead, ancient education not only began to incorporate the

written word, but also education over the centuries has been greatly enhanced by the use of, and

reliance on, books and written language. Indeed, books have enabled teachers to convey, and to

teach, much more information in their classes, and at a higher level of sophistication, because

mere information transfer does not monopolize valuable class time that can be better used for

more intellectual and analytical exploration of issues. So just as books have become invaluable

tools[14] that have allowed good teachers to enhance their students' overall learning experience, so

too will display technology eventually be incorporated into classroom teaching to enhance the

student's learning experience.[15]

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[13]   It is interesting to note that written language and the printing press were not met with open arms
when they first appeared in education contexts. Socrates, after whom the "Socratic method" of teaching in law
schools is named, once criticized written language and the educational reliance on books as follows:

> For this invention of yours [written language/books] will produce forgetfulness in the minds of those who
> learn it, by causing them to neglect their memory, inasmuch as, from their confidence in writing, they will
> recollect by the external aid of foreign symbols, and not by the internal use of their own faculties.

Eric Ashby, *Machines, Understanding, and Learning: Reflections on Technology in Education*, 7 GRADUATE J. 59,
360 (1967), citing Plato, The Phaedrus, trans. J. Wright (London: Macmillan, 1921) p. 104. It is also interesting
that Socrates (really Plato, of course) criticized written language as a crutch that dulled the mind but nevertheless
chose to write his great works so that more than those who could hear him live could enjoy the work and so that the
work could be saved for posterity. This point is further considered in Part III.B.1, *infra*, insofar as it is compared to
the criticism that display technology dulls the mind with oversimplification.

[14]   In fact, it is now hard to imagine a law school class without some sort of book, document or
written text to which the professor and students would study before class and refer to during class. Indeed, students
would probably feel "cheated" if they simply learned by listening and engaging in class, but had no books or
written materials to read and study outside of class, and this is probably true even in clinical ("learn-by-doing")
courses that may not have classroom components.

[15]   This is not to say that books (and by implication, display technology) do not have their
drawbacks, *if not used appropriately*. For example, if a professor simply read portions of a book aloud in class for
the entire class period, not only would that be terribly boring for the class members, but it also would represent the
worst in bad teaching. Accordingly, the same is and will be true with respect to display technology: it will only be
effective if it is used appropriately, and obviously will have ill effects if used inappropriately, *see* Part III, *infra*.

The crux of this article is simple. Professors must first master communication before

they can ever truly teach or enlighten anyone.[16] The essence of communication is to impart ideas

and information in such a way that can be best received by students, especially modern students

who are more computer-literate and more accustomed to receiving information visually than

students of the past. Legal educators communicating by verbal means only can teach difficult

legal concepts and demonstrate intricate legal analysis to their students more effectively and

efficiently by adding display technology to their arsenal of communication tools. Using display

technology in class is a powerful way to meet our students' need for clear communication so

that professors can focus more of their class time on assisting students to conduct sound legal

analysis.

Therefore, using display technology in the classroom should not be controversial. A law

professor who currently uses the chalkboard to clarify a concept already agrees with the

principle that clear visual aids (text and diagrams) enhance communication, and hence learning.

Once a professor concedes that point, all we are left with is a more rudimentary discussion about

the logistical benefit of using more up-to-date technology than a chalkboard to display such

visual aids. Thus, the issue is what is an *appropriate* use of display technology, not whether

display technology should be used at all (unless one is opposed to using the chalkboard).

In the end, a teacher using a visual aid in a classroom setting is as old as the art of

teaching itself. Therefore, this article is not an attack on the art of teaching or on any venerable

legal teaching tradition, such as the Socratic Method, for "[e]ven Socrates drew diagrams in the

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[16]   Therese Maynard, *Preparing the Corporate Lawyer: Teaching Professionalism: The Lawyer as a Professional*, 34 GA. L. REV. 895, 912 n. 35 (2000) (stating that good communication skills are crucial to effective

sand."[17] Rather, this article is a call to enhance traditional legal pedagogy with the benefit of

modern technology in order to communicate in an effective way with today's law students who

already are learning in modern technological environments and will continue to do so for the

rest of their legal careers as 21st Century attorneys.

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teaching). "[A] good teacher both in the classroom and in dealing with students outside the classroom provides a strong role model for her students concerning the importance of communication." *Id.*

[17]   Eric Ashby, 7 *Graduate Journal* 359, 360 (1967) 37 J. Legal Education 97, 99, fn 8 (1987) "Botein notes that even Socrates drew diagrams in the sand." Botein, Videotape in Legal Education: A Study of Its Implications and a Manual for Its Use (New York 1979).

PART ONE:

VISUALLY ENHANCED COMMUNICATION IN SOCIETY, IN EDUCATION

GENERALLY, IN THE PRACTICE OF LAW, AND IN LAW SCHOOL CLASSROOMS

> *Just as the Industrial Revolution dramatically expanded the strength of a man's muscles and the reach of his hand, so the smart-machine revolution will magnify the power of his brain. But unlike the Industrial Revolution, which depended on finite resources such as iron and oil, the new information age will be fired by a seemingly limitless resource – an inexhaustible supply of knowledge itself.*
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> **-**   Author unknown[18]

> *A lot of the older ideas about education . . . now are possible with technology because technology brings the system back to a more personal level, which allows for more project learning.*
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> -   George Lucas, *creator of the movie, "Star Wars,"*[19]

A.   The Present and Future Growth of Visually-Enhanced Communication in Society

The information explosion proliferates today throughout society as access to

information dwarfs even the largest and most comprehensive textbook libraries.[20] The visual

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[18]   *Cited in*, Mark Arkfeld, THE DIGITAL PRACTICE OF LAW (Law Partner Publishing, 2001) 1-1. Despite the sexism of the unknown author who seems to ignore the place of women in history, and apparently in the future as well, the author captures the power and promise of the information age which, in historical time, we have just begun living.

[19]   Interview by Alex Chadwick with George Lucas (NPR radio broadcast, May 15, 2002). George Lucas also founded the George Lucas Educational Foundation, which funds educational technology projects in public schools.   For more information, see www.glef.org.

[20]   *See* Wendy R. Leibowitz, *Electronic Lawyering on the Rise*, NAT'L L. J., Sept. 2, 1996, at B9 (comparing the Internet to the world's largest library); *see also Assessing the Internet*, IRISH TIMES, Dec. 3, 1997, at 20 (stating that the Internet is often compared to a huge library that holds more information than could ever be held in a library full of paper); *see also* Barbara R. Hume, *Getting Tech Support on the Net*, LA TIMES, Oct. 9, 1995, at 47 (stating that the Internet has often been compared to the biggest library in the world); Paul Kyber, *Walking to*

imagery accompanying that prolific information is aesthetically complex: From MTV to the

latest "dot.com" website, from life-like video arcade games to special-effects movies, from

flashy billboards to colorful magazine covers, and from "voyeur cams" to full access

satellite/cable television, the average American and even global citizen daily has access to

unprecedented high tech visual imagery.[21]

The visual technology renaissance is all around us, and it is not limited to

entertainment venues. Business presentations, convention speeches, television news reports and

documentaries, commercial advertisements, etc., all use and rely heavily upon visual imaging

technology to provide superior, efficient and rapid understanding of the complicated messages

communicators are attempting to convey to their respective audiences.[22] The increasing use of

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Your Home Computer Sure Beats Library Trip, RICH. TIMES DISPATCH, Aug. 21, 1997, at D24 (proposing that the Internet gives one access to the world's largest library of information); *Half Aust Small-Medium Business Online*, AAP NEWSFEED, Dec. 14, 1999 (comparing the Internet to a library 1,000 times the size of a football field).

[21] S*ee* William McDonald, *Dazzled or Dazed? The Wide Impact of Special Effects*, N.Y. TIMES, May 3, 1998, § 2A, at 1 (explaining that special effects are a kind of "technological pornography" in that modern citizens are exposed to complex visual stimuli like never before); *see also* Jeannine Stein, *Signs of the Times: Advertisers Envision a Los Angeles Sprinkled with High-Tech Billboards that Move, Interact, and Adapt*, L.A. TIMES, Sept. 6, 2001, at E1 (stating that "technology [is] making outdoor advertising more eye-grabbing, more interactive, smarter, and definitely more in your face"). *See also* John Gaudiosi, *Gamers Set for Holiday Score*, THE HOLLYWOOD REP., Nov. 20, 2001(explaining that new video games "feature better-than-cinematic visuals and new surround sound technology to deliver a breathtaking arcade experience"); *see also* Justina Hart, *This Vision Thing*, TIMES EDUC. SUPP., June 7, 2002, at 15 (stating that "anyone from a television-deprived household appears narrow-minded to their MTV and Sky-Savvy counterparts, as though they inhabit a black and white universe").

[22] *See* Paul Farhi, *Blanketing the D.C. Area With Snow Coverage*, WASH. POST, Jan. 26, 2000, at C1 (proposing that visual technologies such as 3-D flybys and map-in-motion satellite shots have improved TV weather casting and audience understanding tremendously); *see also* Robert L. Lindstrom, *Visual Communications @ Work*, AV VIDEO MULTIMEDIA PRODUCER, July 1, 2001(stating that *"*at some point, the ability to communicate with pictures and sounds will be as critical to business success as reading and writing skills are today"). According to Microsoft, there are now 22 million copies of PowerPoint installed in the U.S., and more than 70 million worldwide. *Id*. *See also* Jon Ralston, *State of the State will Resonate*, LAS VEGAS REVIEW-JOURNAL, Jan 17, 1999, at 23A (explaining that the then newly-elected governor of Nevada, Kenny Guinn, would use visual aids in his State of the State address); *see also* Peter Varhol, *Are You a "Great Communicator"?*, ELECTRONIC DESIGN, Jan. 22, 2001, at 132 (noting that "software technology keeps raising the bar on the definition of an acceptable presentation"); *see also* Steven H. Wildstrom, *Big-Screen Just Got a lot Better*, BUS. WEEK, Feb. 4, 2002, at 16 (stating that the video projector has "become a standard tool in the kit of ordinary folks who give presentations"). Consider also the unprecedented visual press coverage of the U.S.-Iraq War. *See* Tim Goodman, *War's End Marks*

visual communication has been significant, especially for young adults, and it is even more

prevalent for teenagers and pre-teen students from which law schools will draw future law

students.[23] Of course, modern students are demanding education consumers or customers more

than they are defined by the ancient student ideal of someone who would follow around Socrates

just to learn how he thought about society and the world.

      B.   <u>The Present and Future Growth of Visually-Enhanced Communication in Education Generally.</u>

      1.   <u>Why Our Law Students' Educational Background and General Societal Experience Matters.</u>

The global shift toward visually-based communication has serious

implications for legal academia as our students are accustomed to receiving information through

a complicated combination of sound and image. Indeed, it has been estimated that the average

high school student, upon graduation, has completed 11,000 hours of classroom education

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Cable News' Retreat, THE SAN FRANCISCO CHRONICLE, April 17, 2003 (calling the war in Iraq "a visual war like no other"). "[I]n Gulf War II, new technology allowed the onslaught of tanks to be seen rumbling, live, across a desert. Reporters with videophones were everywhere. Guns were going off, the night sky was constantly orange and the battlefield was large, the story mobile." *Id. See also* John Willoby, *Technology Brings War to Living Rooms Like Never Before*, NUECES COUNTY RECORD STAR, April 16, 2003 (explaining that embedded reporters and sophisticated technology have allowed viewers to keep up with the fighting in Iraq 24 hours a day).

[23]   *See* Report, *A Nation Online: How Americans Are Expanding Their Use of the Internet,* (Dep't Commerce Feb. 2002), *available at* http://www.ntia.doc.gov/ntiahome/dn/ (finding that "more than any other age group, younger age groups use computers and the Internet widely for many of their daily activities.") In February, 2002, the Department of Commerce surveyed over 57,000 households and 137,000 individuals across the nation and found that households with children under the age of 18 are far more likely to have computers than families without children: 70.1 percent, compared to 58.8 percent. In the past four years, Internet use among 10-13 year-olds has risen from 39.2 percent to 65.4 percent, and among 14-17 year-olds it has risen from 51.2 percent to 75.6 percent. *Id.*; s*ee also* Jeffery R. Boyll, *Psychological, Cognitive, Personality and Interpersonal Factors in Jury Verdicts*, 15 LAW & PSYCHOL. REV. 1, 11 n.27 (noting that "[o]ur students are bombarded with visual icons wherever they go and are thus primed to consider visual organizers as analytic devices"); *see also* Bettina Lankard Brown, *New Learning Strategies for Generation X*, ERIC DIGESTS, No. 184 (1997), *at* http://www.ed.gov/databases/ERIC_Digests/ed411414.html (showing that Generation Xers are technologically literate).

compared to 15,000 hours of television viewing.[24] While this statistic may be an unfortunate

statement about a recent decline in modern education, it nonetheless describes the reality that we

are encountering today. This phenomenon just adds another layer to the generational gap

challenge that professors must overcome as they attempt to teach students from a younger

generation with widely differing cultural references.[25]

        Given these realities, an important question for legal academia is this: To

what extent have TV, computer games, the Internet, movie special effects, and so on, made

teaching with visual technology quite conducive to the learning norms and information

reception experience and abilities of current and future law students?[26] As a corollary, to what

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[24]   R. Dennis Donoghue, *Demonstrative Exhibits: A Key to Effective Jury Presentations*, PATENT LITIGATION, 369, 371 (1992) (PLI Pats., Copyright, Trademarks, and Literary Property Course, Handbook Series No. G4-3892, 1992), *available at* WL 349 PLI/Pat 369.

[25]   *See* www.Beloit.edu. Every year, Beloit College publishes "The Mindset List" to emphasize the point that often professors' lists of cultural references are far different than those of the younger students taking their classes. Although the list applies to college freshman born in 1984, rather than first year law students, at least four years older, the overall point is still applicable. The list sets forth 50 examples of cultural references that professors know but their students probably do not, such as: The statement "You sound like a broken record" means nothing to students as they never owned a record player; Most have never seen a TV set with 13 channels, nor have they ever seen a black-and-white TV; Jay Leno has always been the host of "The Tonight Show;" and, There has always been MTV. There are 50 such cultural references, and doubtless countless others exist. Even comparing the current mindset list with older versions (within five years) shows a rapid change of cultural references

[26]   *See* Dr. Patrick Groff, *Auditory Versus Visual Styles of Learning to Read: A False Dichotomy*, NAT'L. RT. TO READ FOUND., *at* http://www.nrrf.org/003_auditory_vs_visual.html (stating that "multisensory teaching (combining visual, auditory, and kinesthetic learning) produces the greatest growth in children's reading competency"); *see also* Steven I. Friedland, *How We Teach: A Survey of Teaching Techniques in American Law Schools*, 20 SEATTLE UNIV. L. R. 1, 35 (1996) (surmising that "visual learning techniques provide a pertinent illustration of techniques [that] . . . may augment and reinforce the learning of many students weaned on television and movies"). Producers of educational television have capitalized on this. For example, watching the "Discovery Channel" (self-describing as a channel that uses "new high-definition technology to come ever closer to the clearest visual experience in human history," *at* discovery.com), the "History Channel" (historychannel.com), or the "Learning Channel" (tlc.discovery.com) is far more likely to inspire people about topics or encourage people to read books on a topic, as compared to reading only a textbook or encyclopedia for entertainment. This is not to suggest that reading a book is no longer important or relevant, but instead is simply an acknowledgment that law students, like it or not, are receiving more information visually than ever before. Visual learning begins very early for most children if they are exposed to such programs as "Sesame Street," which uses imagery and visual

extent does visual teaching make information more timely and topical than ever before?[27]

Presented another way, it may be that modern visual communication forms are merely

responding to the reality that human learning might be better served by a combination of visual

stimulation and verbal instruction, instead of verbal instruction alone. As a result, perhaps legal

education should follow suit.

If conveying information through imagery is more beneficial not only because

our students' learning centers are visually trained, but also because conveying information using

imagery is more effective in its own right, then to what extent should law professors be

adjusting our teaching methods to communicate complex ideas to our students through high-tech

graphics?[28] To the extent law students can ingest more information and at a higher level

communication to a great extent as a child first begins to learn; and such visual learning continues up through the time they are, or will be, entering law school. *See* Aletha C. Huston and John C. Wright, *Children and Television: Television and the Informational and Educational Needs of Children,* 557 ANNALS 9, 10 (1998) (describing how Sesame Street teaches children "letters, numbers, concepts, science, and information of all kinds" through formats that appeal to them, such as animation). "Some educators consider the visual character of television a distinct advantage because of young children's tendency to give visually presented information priority over verbally presented information. Because children tend to learn from concrete, visual presentations, television is well suited to their learning styles." *Id.* at 16. According to one study, children who frequently watched *Sesame Street* and other educational programs at age five received higher high school grades in math, science, and English, than children who viewed infrequently. *Id.* at 13.

[27] *See* Robert B. McKay, *What Law Schools Can and Should Do (and Sometimes Do)*, 30 N.Y.L. Sch. L. Rev. 491, 491 (1985). *See also*, Dennis Adams & Mary E. Ham, Media and Literacy: Learning in an Electronic Age, p 28 (stating that [t]extbooks, for example, have rarely given students much of a feel for real history, science, or art. They often manage to simultaneously bore and avoid critical issues. Because of the creaking slowness of textbook medium in addressing critical issues, many teachers are turning to PBS programming, newscasts, newspapers and library books to teach breaking issues in social studies and science.").

[28] If the objective is to connect effectively with the students in the classroom, there is ample proof that using visual means of communication to help clarify verbal statements will greatly enhance our ability to meet that objective; *see* supra n. 10; *see also*, *e.g*., Steven F. Jackson, *The Use of PowerPoint in Teaching Comparative Politics*, THE TECHNOLOGY SOURCE (May 1997), *at* www.horizon.unc.edu/TS/default.asp?show=article&id=541 (reporting student feedback, and the benefits of using PowerPoint to teach two comparative politics classes at Indiana University of Pennsylvania (IUP)). IUP reports substantial increases in student satisfaction and enrollment, as well as increased perception, retention, grasp of material, organization and enjoyment. *Id*. IUP explains that the most important conclusion gathered from the survey is that PowerPoint presentations make the class sessions more interesting according to 95% of IUP students surveyed. *Id*. Also, IUP found that the PowerPoint presentations helped students take notes and understand the material. *Id*. One of the overwhelmingly positive student reactions

through visual stimuli in addition to verbal expression, rather than just through words alone,

legal academia is failing to take advantage of that opportunity because most law professors use

only one form of information transfer to teach law students – sound/verbal communication.[29]

Legal academia should consider the visual educational backgrounds and the visual educational

experiences of law students as those students obtain 16 years of public or private education

before ever taking their first law school class.[30]

2. Are Other Educational Institutions Leaving Legal Academia Behind?

When I began using display technology in the classroom over eight years

ago, I was regarded as a "pioneer" at best, a "curious oddity" at worst, but, in any event, I was,

essentially "out there" by myself.[31] In the beginning, some colleagues immediately saw the

benefit of teaching with display technology, especially those who already were using the

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included the following: "I could concentrate on the discussion better and organize my notes more efficiently with the presentations." *Id.*; For a complete discussion on the history of legal education and introduction of technology in legal education, *see* Stephen M. Johnson, *WWW.LAWSCHOOL.EDU: Legal Education in the Digital Age*, 2000 WIS. L. REV. 85, 86-92 (2000).

[29] *See* Sheppard, supra n. ___, at 636 (noting that according to a 1995 survey, sixty percent of professors use no audiovisual aids, either during class or outside of class); *see also* James Eagar, *The Right Tool for the Job: The Effective Use of Pedagogical Methods in Legal Education, 32* GONZ. L. REV. 389, 410 (1997) (noting that although audio-visual simulations are used extensively in the practice of law, except for chalk and a blackboard, few law professors use visual aids in the classroom). *See also* Nira Hativa, *Teaching Large Law Class: An Outsider's View*, 50 JLEGED 95, 102 (2000) (observed classrooms rarely used chalkboards let alone any audiovisuals or computers).

[30] *See* Vincent R. Johnson, 37 J. Legal Educ. 97, 98 (1987) (noting even 17 years ago that,"[o]ne characteristic shared by most students currently enrolled in law school is that, willingly or not, they are products of the electronic media generation, having been nurtured on ever more pervasive forms of audio and video media, at home, at play, and in earlier schooling. (Fn omitted) From this common experience, legal educators should take their cue. (Fn omitted)" *See also* Richard A. Matasar and Rosemary Shields, 29 Val. U.L. Rev. 909, 910 (1995). (Recognizing that "[s]tudents brought up with technology will need technology to learn.").

[31] This extreme solitary feeling is no longer the case as usage statistics appear to be changing. According to Ron Marcroft, Director of Media Resources at the University of the Pacific/McGeorge, as of Jan. 1, 2004, 39% of the law faculty now regularly use display technology of some sort in their classes.

chalkboard, or overhead projectors, in class themselves; while others saw computer display

technology more as "entertaining" but certainly not as a serious, "scholarly" way to teach (even

some who relied on the chalkboard to a certain extent).[32] Perhaps it is because no professor

from the 1950s through the early 1990s – the role models of most current, experienced, tenured

law professors – ever taught with display technology that some law professors might see display

technology as a techno-fad that is too novel for the classroom. Such professors probably have

reasoned that since their former professors -- their own pedagogical role models – seemed

effective in the classroom without the use of technology, so too can they be. Although the

reluctance to use technology to teach is changing somewhat,[33] the use of display technology in

the classroom by law professors is still fairly uncommon.[34]

But perhaps the comparison between law professors who use display

technology with those who do not use display technology is not the most meaningful

comparison to make. Instead, law school professors as a group use display technology less

frequently than do professors at undergraduate and other graduate institutions outside of legal

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[32]   This is admittedly anecdotal rather than empirical, as I have no statistics on the range of various
reactions I have received over the years other than what I can recall. However, one colleague in particular foresaw
what was to come when back in 1985 he accurately predicted the use of presentation technology in the classroom.
See Charles D. Kelso, _, 35 J. Legal Educ. 507, 508 (1985) (discussing the ability of computers to project
hypotheticals and material by use of a computer and projector and stating that, "[c]omputer diagrams are crystal
clear, and since the computer can draw in color, it can present more information than can easily be put on a
blackboard.").

[33]   *See e.g.* Steven Johnson, *supra*, n. 29, at 36 (noting that technology is beginning to "play a more
central role in legal education."); *see also* Jackson, *supra* note 27 (expressing that technology in the classroom is
quickly becoming the norm rather than the exception to the rule). "The question facing higher education is no
longer *whether* to use technology in teaching. The question is now *which* technologies are most suitable for the
myriad of courses taught." *Id. (emphasis added).*

[34]   *See supra* note 27 (noting display technology currently is still the exception rather than the rule).

education.[35] For example, medical schools are using display technology to a much greater extent than law schools,[36] and business schools are far beyond law schools in teaching their students about computer technologies in the workplace.[37] So perhaps instead of being a "novel pioneer" in higher education, a law professor who uses display technology in the classroom is merely keeping pace with the rest of general undergraduate and graduate academia.

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[35]   *See* Shelley Ross Saxer, *One Professor's Approach to Increasing Technology Use in Legal Education*, 6 RICH J. L. & TECH 21, 21 (2000) (noting that "undergraduate professors in business, science, religion, and other subjects commonly use presentation software to illustrate substantive concepts with formulas, maps, and text"); *See also* Paul F. Teich, *How Effective is Computer-Assisted Instruction? An Evaluation for Legal Educators*, 41 J. LEGAL EDUC. 489, 489 (1991) (noting that "law schools have been much slower than other professional and graduate schools to adopt computer-augmented teaching methods"); *see also* http://learninglab.stanford.edu/index.shtml (describing how professors at Stanford are using technology in their undergraduate courses from the humanities to biology); *see also* http://oms1.berkeley.edu (explaining the wide variety of services provided by University of California, Berkeley's Educational Technology Services, including classroom technology, video and broadcasting, webcasting, and videoconferencing); *see also* http://www.icg.harvard.edu/ (Harvard's Instructional Computing Group (UCG) provides technological resources to Harvard faculty, including assistance in teaching with technology.) Many undergraduate professors have utilized ICG's services; in 2001-2002 over 500 courses per term developed individual websites. *Id.*; *See also* http://www.washington.edu/teaching/#itmr. (explaining the various technological services offered by Teaching @ the UW, including one-on-one assistance with PowerPoint presentations, web site development, image scanning, and multimedia consulting).

[36]   *See* Jeremy P.T. Ward, *et. al.*, *Communication and Information Technology in Medical Education*, THE LANCET, March 10, 2001, at 792 (noting that animations, simulations, and video are useful tools in teaching difficult medical concepts, and finding that "[w]ithin less than two student generations, communication and information technology (C&IT) has been repositioned as an integral component of the medical school environment"). *See also* Teich, *supra*, n. __, at 489 (stating that other graduate schools have been quicker to adopt computer-augmented teaching methods).

[37]   *See* Galves, *supra,* n. 10, *at* 275 n. 369 (describing how business schools teach students the technology they will need in their future jobs). *See also e.g.,* Harvard Business School at http://www.hbs.edu/it/main/strategy.htm (explaining that the Harvard Business School's "technology-charged environment" encourages "the dynamic exchange of ideas"); *see also* Wharton at Penn at http://www.wharton.upenn.edu/whartonnow/tech.html., (describing how technology utilized in the learning lab allows students to engage in "real-world exercises"); *see also* Stanford Graduate School of business, *at* http://www.gsb.stanford.edu/exed/suit/ (In recognition that a successful business organization "must embed IT within its structure, culture, and business strategy," Stanford Business School offers a special program--Strategic Uses of Information Technology--designed to teach students how to utilize technology in business environments.)

Thus, as society continues to change with more and more complex transmission of visual imagery communication, and as undergraduate colleges and universities, as well as other professional graduate schools, reflect that technological change by using display technology in education at all levels, perhaps law school professors should attempt to ensure that legal education does not fall seriously behind the visual technology curve in general higher education. Even if we long for the "good ol' days" of a law professor doing nothing more than asking verbally poignant questions during class, we should not categorically resist, or even fear, the benefits and inevitable advancements in classroom display technology.[38]

C.   The Present and Future Growth of Visually-Enhanced Communication in Litigation and in the General Practice of Law

1.   Is Legal Academia Also Falling Behind the Legal Profession?

Along with the general societal and educational transformation, the practice of law, especially litigation, is also adapting to a more visually oriented world. This adaptation is not so much of a technological "revolution" by attorneys, as it is the continued natural development of a pre-existing long, rich history of attorneys using visual aids in trial.[39]

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[38]   Just as professors should not ignore "on-line" legal education, be it an entire law school on line, such as Concord University Law School, (see www.concord.kaplan.edu) or teaching assistants and supplemental aids in various subjects or Computer-Assisted Law Instruction "CALI," (see www.2.cali.org) neither should law professors ignore the advent of classroom display technology. Although these issues are beyond the scope of this article, law professors should take charge in these areas, instead of allowing others to teach their students for them or be left behind as the rest of academia advances their teaching methods.

[39]   *See* Jennifer L. Mnookin, *The Image of Truth: Photographic Evidence and the Power of Analogy*, 10 YALE J.L. & HUMAN. 1, 14 (1998) (explaining that attorneys began using photographs in the courtroom in the mid-1800's; by the end of the 19th century the photograph "had become a significant evidentiary tool")*; See also* Frederic I. Lederer, *"Tete-a-tete on Techno-trials,"* 85 A.B.A.J. 78 (June 1999) (noting that computer-generated exhibits are "simply an extension of a trial lawyer's traditional way of presenting evidence or improving the presentation of a case or the administration of justice."). *See also* Robert E. Keeton, TRIAL TACTICS AND METHODS 81 (1973) (explaining that even non-computerized visual aids–such as drawings on paper and blackboards–allow the witness to "more accurately convey to the jury the idea that is in his own mind").

Long before computers and display technology, successful and effective trial attorneys were

using visual aids such as blow-up placard/poster-board exhibits, photographs, diagrams of crime

scenes, lists of elements, time lines, even chalkboards or large butcher block paper, and magic

markers.[40]

Although it perhaps has taken longer for attorneys than for other

professional sectors of society to "go high-tech" in using computer-generated images in their

field,[41] lawyers have now begun to take full advantage of the power of computerized display

technology in the courtroom.[42] Successful attorneys now use display technology at trial in order

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[40]   *See* Keeton *supra note 38; see also* William H. Ginsburg, *Final Argument: The Closing Effort*, *in*
WINING STRATEGIES AND TECHNIQUES FOR CIVIL LITIGATION 221 (James E. Lyons, ed., 1992) (explaining that
"professional blowups of charts and pictures...films, slides, and the like" help focus the jury's attention). Frederic I.
Lederer, *An Environment of Change: The Effect of Courtroom Technologies On and In Appellate Proceedings and
Courtrooms*, 2 J. APP. PRAC. & PROCESS 251, 266 (2000) (suggesting that the combination of both oral and visual
matter helps jurors better understand and remember content). Also, a study was conducted that suggested that
"cases involving video records were more likely to be affirmed than those with traditional transcripts." *Id.* at 259;
State v. Knight, 43 Me. 11, 131-32 (1858) (explaining meaning through the use of witness diagrams); *see also*
Galves, *supra* note 10, at 179 (citing current uses of visual aids in court). "Witnesses often draw their path on a
diagram, point to a section of a contract, or read a certain line from a letter or deposition that the attorney then
highlights on a large poster-board enlargement of a document." *Id.*; *see generally* Kalinski, *supra* note 23, at 791
n.18 (citing to courts that have allowed demonstrative evidence such as photographs, x-rays, anatomical models,
blueprints, charts, and graphs to be admitted); *see also* Symposium, *supra* note 23, at 1082 (noting the statistical
and practical advantages of using visual aids in the courtroom). "Visual aids allow you to logically convey your
client's story to the jury. You may hone in on pertinent facts relative to your case in ways that will dramatically
increase understanding and retention during deliberation – days, weeks, or months later." *Id.*

[41]   For example, practicing physicians and surgeons have come to rely on visual imaging in their
profession. *See e.g.*, Ihsan Dogramaci, *Science & Civilization: Tasks for the Next Millenium*, 23 FLETCHER F.
WORLD AFF. 171, 178-79 (1999) (explaining that image-processing techniques are being used in areas of medicine
like neurosurgery whereby a mini-robot discovers and removes unwanted growth); Gary Goettling, *The Art and
Science of Healing*, GEORGIA TECH ALUMNI MAGAZINE (last modified March 18, 2002), *available at*
http://gtalumni.org/StayInformed/magazine/win98/artheal.html (discussing how biomedical engineering utilizes a
variety of computer-imaging techniques such as computerized topography (CT) and magnetic resonance imaging
(MRI)). These imaging techniques are critical because they "allow the surgeon to more effectively and accurately
visualize a cross-section of tissue in three dimensions." *Id.* at 5.

[42]   For a complete discussion on computerized display technology in the courtroom, *see* Galves,
supra note 10, at 177-260; *see also* Stephen G. Norton, *The Electronic Courtroom Revolution: The Right Stuff*, 26
VT. B.J. 47, 48 (2000) (explaining the advantages of PowerPoint, a display technology program, in court).

     PowerPoint can bracket this incredibly deft manipulation and publication of the exhibits during opening
     and closing. During the evidence phase itself, you can instantly use confront the prevaricating witness or

to explain, simplify, clarify, and vivify their case theories and versions of the facts to various critical "decision makers," such as the jury, or judge in a bench trial, as well as opposing litigants in settlement negotiations or judges in pretrial motion hearings. In doing so, attorneys are able to enhance the comprehension of such decision makers,[43] which is necessary to persuade these decision makers and to help them retain important information as they render their final decisions.[44] So the legal profession already is adapting to a high-tech, visual world with computer display technology.[45]

> dissembling expert (as occurred during the recent Microsoft trial) – not with cumbersome "didn't you tell me then" lectures, repeated strolls to the witness stand, flapping deposition transcripts, and scintillating "page and line" exchanges -- but with in-your-face images of the actual deposition testimony or the smoking gun exhibit itself.

Id.; *see, e.g*., Lederer, *supra* note 38 (outlining a "laboratory trial" conducted annually by the Courtroom 21 Project at William and Mary Law School, a jury trial "designed to determine how a judge, counsel, and jury handle the technologies available in the project's courtroom").

> Counsel will argue from a rotatable control podium, complete with a built-in liquid crystal display (LCD) monitor that includes all the technology a lawyer might use to present the case. As the attorneys argue, they may seek permission to display key aspects of the brief on the judge's monitor. The judge may respond by displaying on counsel's monitor material from either the defense or plaintiff's brief. The judge may also display legal authority from Lexis or Westlaw, CD-ROM's, or the Internet. Thus, traditional legal argument becomes a visually supported argument. Voir dire begins. The judge or counsel goes over the list of witnesses. As each name is mentioned, the jury sees a photograph of the witness, displayed either as a computer "slide show" or on monitors connected to the courtroom's document television camera. Visually augmented voir dire diminishes the possibility of a juror finding out during trial that he or she knows the witness.

Id. at 39, 40.

[43]   S*ee* Symposium, *supra* note __ 23, at 1085 (explaining the viewpoint of attorney Robert F. Ruyak). "My concept is that up front you have to explain all of the mechanical devices, the jargon and the characters in litigation. You do this by taking a novel and reducing it to a screenplay – a 500 page novel to a two-hour screenplay." *Id*.; *see also id*. at 176 n.42 (citing Robert Mallett, *Computer Simulation in Court*, N.Y.L.J., May 6, 1996, at S10) (pointing out that for people who are not great storytellers, verbal explanations can seem "lengthy, incomprehensible, confusing, and thus ineffective" to the jury). The most successful way to communicate complex information is visually. *Id*.; *see also id*. at 186 n.68 (citing Mark Kolber, *Just Picture It: Advocacy and Computer-Generated Presentations*, COLO. LAW , Dec. 1997, at 29) (stating that while attorneys are usually trying to reach the jury through their ears, most of what people learn is through their eyes). *Cf*. Paul J. Feltovich et al., *The Reductive Bias and the Crisis of Text in the Law*, 6 J. CONTEMP. LEGAL ISSUES 187 (1995) (arguing that when particular ideas or concepts are put into words, they are necessarily reduced in the process and the audience must then reconstitute the words back into concepts in their minds). This leads to multiple interpretations resulting from the reconstitution process. *Id*. *See also* Galves, *supra* note 10, at 186 n.67, 68.

[44]   *See* Galves, *supra* note 10, at 189 (deducing that "[t]he same information perceived visually is more easily believed and has a greater impact than when gathered from an indirect, second-hand source – the word

Some law schools are keeping up and even leading the profession with respect to state-of-the-art technological courtrooms. For example, at Southwestern University School of Law in Los Angeles, California, the Julian C., Dixon Courtroom has been created and is acknowledged as the most modern technological courtroom in the country. [46] But even though some law school courtrooms are on the cutting edge of the profession, law school classrooms often are still lagging behind, especially if professors do not use the display technology available in "smart classrooms." Although law professors teach theory in an academic setting, what goes on in the law school classroom should not be out of touch with what is happening in the legal profession – the very profession that we are training our students to enter. [47] So not only should

of another – because visual information is direct (an actual image) instead of indirect and abstract words (step 1) used to create a mental image (step 2) in the mind of the jury"); *see also id*. at 189 n.77 (citing Jeffrey R. Boyll, *Psychological, Cognitive, Personality and Interpersonal Factors in Jury Verdicts*, 15 LAW & PSYCHOL. REV. 163, 173 (1991)) (noting that as much as two-thirds of what is heard may be immediately forgotten and that one of the consequences of this poor memory retention may be that a juror might associate some facts or witness from one side of the case with the wrong party).

[45]   *See n. 59, infra; see also,* Kate Marquess, *"Try All Trial Styles,"* 88 A.B.A.J. 91 (July 2000) (noting that "[i]n today's modern age, you must, *you must*, use technology.").

[46]   *See* Andrew Taslitz, "*Digital Juries Versus Digital Lawyers*," 19 Criminal Justice Magazine 1, at 8 (ABA Criminal Section, Spring 2004) (describing the new state-of-the-art courtroom at Southwestern University School of Law). "This new high tech [Julian C. Dixon Courtroom and Advocacy Center] . . . serve[s] the legal profession and the community as well as aiding in educating law students in digital technologies. The courtroom includes a multimedia and Web-based evidence presentation system; an audio-visual system encompassing remote conferencing capabilities that accommodate multiple participants, even in judicial chambers [and special ADR room]; individual monitors and large[plasma]-screen displays [and mobile "Smartboard"] for attorneys, judges, jurors, and observers; an automated court reporting system; foreign language interpretation, technologies to assist the handicapped, state-of-the-art acoustic balancing and sound systems; and a technology augmented [ADR room and] jury deliberation room designed according to research guidelines funded through the State Justice Institute. This is the latest high-tech training courtroom; earlier ones include[e] the Courtroom 21 Project at William and Mary School of Law in Virginia [and] the National Judicial College at Reno, Nevada . . . ." For further elaboration regarding the Julian C. Dixon Courtroom at Southwestern University School of Law, *see* www.swlaw.edu/campus/dixoncourtroom.html, as well as the "spotlight" link to the courtroom.

[47]   *See* American Bar Association, Legal Education and Professional Development - An Educational Continuum, Report on the Task Force on Law Schools and the Profession: Narrowing the Gap (1992) [hereinafter "MacCrate Report"] (proposing that many law school curriculums are not providing the training and skills required to produce competent lawyers). The MacCrate Report begins with a description of "The Profession for Which Lawyers Must Prepare" and identifies changes in the profession, including the growth of the large firm,

students learn how to use teaching in the practice of law, but perhaps professors, as role models, should teach with technology.

2. Can Law Professors Learn Anything From Trial Attorneys?

Ideally, legal academia ought to be on the cutting edge of the legal profession, but if not, it at least ought to "keep up" with the legal profession as a general and laudable "MacCrate Report" type of goal. Consider the experience of trial attorneys. Trial attorneys have extremely important pedagogical objectives they are trying to accomplish with jurors in the courtroom, just as law professors are trying to accomplish similar goals with students in the classroom. Accordingly, law professors, if we are not going to be overly elitist in our own professional calling as teachers, might learn some important classroom presentation and overall teaching lessons from trial attorneys.[48] Although law students obviously are different than jurors, consider for a moment the substantial overlap between them in terms of the need to receive and understand complex legal and factual information. Although much more is expected of law students than jurors (critical legal thinking, argumentation, reasoning from precedent, etc.) basic information transfer and receipt is common to both groups.

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specialization, advertising, government law departments, and the legal needs of the public. *Id.* at 9-119. The Report states that law schools must respond to changes in the profession by making changes in legal education. *Id.* The Report also states that studies "demonstrate that relatively few law students have exposure to the full range of professional skills offerings." *Id.* at 240. *See generally* Russell Engler, *The MacCrate Report Turns Ten: Assessing its Impact and Identifying Gaps We Should Seek to Narrow,* 8 CLINICAL L. REV. 109, 110 (2001).

[48] Of course, the opposite is true as well because trial attorneys certainly could learn much from law professors, as undoubtedly many did when they attended law school. But the focus here is on what law professors can learn from the current experience of trial attorneys in presenting and explaining their cases to juries using display technology.

In order to persuade a juror, trial attorneys know they must make sure that the jury first *understands* the lawyer's entire theory of the case.[49] Trial attorneys have to become *teachers,* so that jurors can have a full command of the facts and know how to apply the law (the applicable jury instructions) to those facts. Only by teaching their cases to the jury can trial attorneys persuade the jury about the logic and reasonableness of their cases during closing arguments.[50] So jury understanding is a prerequisite to jury persuasion.

Trial attorneys who use visual aids know that "[t]he use of technology is an integral part of persuasive advocacy,"[51] because they understand that jurors immediately forget nearly two-thirds of what they hear.[52] Moreover, much of what is heard is misunderstood.[53] Trial attorneys who use visual aids appreciate that jurors remember a fact

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[49]   *See generally* Robert N. Sayler, *"Symposium: Improving Communications in the Courtroom Proceedings,"* 68 Ind. L.J. 1093 (1993) (noting that communication between attorneys and the jury is critical to trial success).

[50]   *See* Claire L. Rychlak & Ronald J. Rychlak, *"Real and Demonstrative Evidence Away from Trial,"* 17 Am. J. Trial Advoc. 509 (1993) (observing that trial attorneys are like teachers because jurors are "taught" by lawyers about a case and by the judge about what the law is); *see also* Theodore D. Ciccone, *"Panel Three: Demonstration and Discussion of Technological Advances in the Courtroom,"* 68 Ind. L.J. 1081, 1082 (1993) (explaining that using visual aids helps trial attorneys "logically convey [their] clients' stor[ies] to the jury."

[51]   *See* Frank D. Rothschild et al., *PowerPoint for Litigators: How to Create Demonstrative Exhibits and Illustrative Aids for Trial, Mediation, and Arbitration* (Deanne C. Siemer ed., 1999). This how-to-manual has been written on how to prepare a PowerPoint presentation for court, it is published by The National Institute for Trial Advocacy ("NITA"). The use of display technology in court continues to grow, as seen from the publication of this kind of book, the incorporation of PowerPoint in Trial Advocacy classes in law schools, and the training of attorneys in the use of PowerPoint.

[52]   *See* Dr. Jeffery R. Boyll, *Psychological, Cognitive, Personality and Interpersonal Factors in Jury Verdicts,* 15 Law & Psychol, Rev. 163, 173 (1991) (citing results of the Wechsler Memory Scale test whereby subjects were told a short story involving a crime which contained twenty-four "bits" of information. Immediately, the subjects forgot approximately two-thirds of the "bits").

[53]   *Id.* at 171 (noting that many jurors fail to understand basic legal concepts and legal jargon).

better if that fact is learned visually,[54] and they realize that visual demonstrative evidence lowers

the chance of misunderstanding the crucial evidence in the case and the key inferences that need

to be made by jurors, who are not even legally trained.[55] Trial attorneys using visual aids are

aware of the consequences of failing to connect with a juror and likewise are aware of the

benefit of making their cases understandable.[56]

Trial attorneys who use visual aids understand that computer-generated

exhibits aid juries by making otherwise boring, complex, almost inaccessible information: 1)

imaginable, by prompting sensory imagery, 2) *have proximity*, by making it close to what the

jury understands, and finally, 3) *memorable,* by enhancing the jury's ability to recall critical

information during deliberations.[57] Accordingly, successful trial attorneys use computer-

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[54]   *See* Jane A. Kalinski, Note, *Jurors at the Movies: Day-in-the-Life Videos as Effective Evidentiary Tool or Unfairly Prejudicial Device?*, 27 SUFFOLK U.L. REV. 789, 792 (1993) (reporting that, with respect to jurors, "…after three hours, participants retained twenty percent more information introduced in a combination visual-oral presentation than a purely oral presentation"). "Moreover, after seventy-two hours, participants remembered five hundred percent more of a combination visual-oral demonstration than a purely oral demonstration." *Id*. at 792; s*ee also* Windle Turley, *Effective Use of Demonstrative Evidence--Capturing Attention and Clarifying Issues*, TRIAL, Sept. 1989, at 62 (citing a study showing that jurors given visual presentations retained 100% more information than those given oral presentations alone). Although results vary, they all significantly point toward the enhanced learning effect of both sound and image instead of sound alone.

[55]   S*ee e.g*., n. 41, *supra*, (stating that "[r]esearch has shown that the use of visual aids with an oral presentation can aid comprehension, minimize misunderstanding and increase retention level by as much as sixty-five percent"); *see also* Frederic I. Lederer, Courtroom Practice in the 21ˢᵗ Century, TRIAL, July 1999, at 38, 40 (voicing the belief that "[m]any people are visual learners, absorbing best the information that they see rather than hear," and that the visual trial increases witness comprehension and counsel persuasion). Galves, *supra* n. 10, at 189 (noting that attorneys use visual aids because of their ability to make information more familiar and to reduce misunderstanding); *see also* Id. at 190-91 (proposing that computer generated exhibits increase the amount of information that is absorbed by a judge or jury, thereby enabling them to understand complex concepts more clearly because the information is perceived by sight and hearing, instead of hearing alone).

[56]   Lederer, *supra,* n. 54.

[57]   *See* Galves, *supra* n.10, *at* 187-189.

generated display technology every day and the trend is for that usage to keep growing,[58]

because trial attorneys are harnessing the teaching power of display technology. In short,

attorneys have seen the benefit and advantages display technology gives them in making their

complex cases understandable for a jury.[59]

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[58]   *See* Hope Viner Samborn, *Turning the Page on Paper: As Electronic Devices and Case Management Software Make Their Mark on the Profession, Lawyers are Discovering that Technology Makes a Welcome Partner,* 46 A. B. A. J. 80 (MARCH 2000) (noting that "more trial attorneys are integrating technology into their courtroom presentations and strategies, especially since many courts already have the technology in place"); s*ee also* Evelyn D. Kousoubris, *Computer Animation: Creativity in the Courtroom,* 14 Temp. Envtl. L. & Tech. J. 257, 259 (1995) (noting that in the 1970's, with limited technology, computer use in the courtroom was only an idea, and that by the 1990's, computer use in the courtroom had become common.)

[59]   *See* Rebecca Porter*, Law Schools Enroll Technology To Teach 21st-Century Lawyers,* TRIAL, Apr. 1999, at 100 (quoting Tom Rogers, legal technology manager at Nova Southeastern University Law Center in Ft. Lauderdale, Florida). "We see legal practice transitioning to a more efficient, technology-driven system. Those able to participate in that won't be disadvantaged by these changes." *Id.* For a complete discussion on "new tools" used in the courtroom to streamline case presentation and enhance the impact of a case on the judges and jurors, *see* Dennis M. Kennedy, *Bringing Presentation Technology into the Courtroom*, 43 RES GESTAE 11 (1999). *See generally* Debra Baker, *Wired for Insight*; *TIPS Academy Helps Lawyers Learn How Jurors React to Trial Tactics*, A.B.A., July 2000, at 95 (reporting a mock trial academy held in Spring, 2000 at the National Judicial College on the campus of the University of Nevada and sponsored by the ABA Tort and Insurance Practice Section).

> Jurors used handheld devices to register their reactions to the arguments and evidence the lawyers presented. A computer program then translated those responses into a line graph that appeared on a video monitor in real-time. The lawyers could then evaluate their level of persuasiveness as they presented each aspect of their case. The jurors also used the devices to vote for the plaintiff or defendant after key portions of the trial: voir dire, opening statements, the plaintiff's case, the defendant's case and closing arguments. Scores appeared on the monitor, showing the lawyers the points in the case where they won or lost jurors.

Id.; *see generally supra* n. 46 (describing a second mock trial held in Spring, 2000 at the National Judicial College on the campus of the University of Nevada and sponsored by the ABA Tort and Insurance Practice Section, which was a study in contrasting courtroom styles, with one lawyer utilizing technology, and one not). Plaintiff's lawyer Joseph Cotchett implored the jury to find for his client, appealing to their emotions and patriotism, while defense attorney Fred Bartlit, Jr. "countered Crochett's emotional closing argument with a dispassionate presentation...with Microsoft Power Point software." *Id.* at 91. "In today's modern age, you must, *you must* use technology, Cotchett said. You're dealing with very smart jurors. They have tremendous access to information..." *Id.*; *see also* Norton, *supra* note ___ 30, at 47 (2000) (discussing one experience of the author's utilizing PowerPoint during a seminar).

> Burlington: 1998: I use PowerPoint for my portion of a VBA seminar on Baubert v. Merrell Dow, drawing on only a fraction of the awesome power of this simple tool. Judge Matthew Katz approaches me afterward and informs me of his hope and expectation that I will use PowerPoint in my next closing argument.

Id.; *see also id.* at 48 (explaining the advantages of PowerPoint in a courtroom setting).

What do all of these significant courtroom legal practitioner realizations have to do with legal education? This trial attorney-juror pedagogical phenomenon should resonate with law professors who are dedicated to teaching complex legal doctrines and case law to law students eager to learn them. If using display technology in a courtroom works better than words alone, because jurors can better understand, recall, and apply complex legal and factual information when they both hear and see it as they learn it, then there is ample reason to believe display technology also would work better than words alone in a law school classroom because law students can better understand, recall, and apply complex legal and factual information when they both hear and see it. In many respects, law students are just as unfamiliar with the law and complex cases as a typical lay juror, especially when law students begin law school and are desperately trying to understand, retain and apply vast amounts of complicated information. Law students then, like jurors, "deliberate" in class and in their study groups throughout their legal education. Although lawyers are not trying to make legal professionals out of jurors the way that law professors are trying to do with law students, there is a similar learning point and teaching goal that is present for both law students and for jurors that law professors ought to acknowledge.

3.   But Are Law Students Really the Same as Jurors?

Of course, law students are not *exactly* the same as jurors, as law students are required to perform a very different function in law school and are subject to very different expectations from their professors.[60]   Because jurors are, ideally, the societal "peers" of the

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[60]   I acknowledge that law students have to be taught (become intellectually engaged with) the law, legal analysis, and legal skills *actively*, while jurors are simply "taught" (presented with) competing versions of the facts *passively*. Indeed, jurors generally are not allowed to ask questions during trial. *See* Douglas G. Smith,

litigants and as such have been called to evaluate evidence, their purposes are to determine the credibility of witnesses, consider admitted exhibits, follow the law (jury instructions), and then render a verdict[61] – more passive purposes that are different from those of law students. Law students, unlike jurors, are required to have college degrees, to learn the theoretical underpinnings of the law, and must be capable of developing legal analytical skills. Further, they need to engage intellectually with their professors, analytically perform inside and outside of the classroom, pass their courses, and upon graduation, pass the bar exam and then eventually practice law as a specially and highly-trained, pro-active professional. Perhaps most importantly, law students need to learn how to think and analyze like a properly trained lawyer, not simply remember a fact or applicable rule like a non-legally trained juror. Law students, if they become trial lawyers or not, need to be effective communicators. The beginning of learning to communicate to a decision maker is to be exposed to effective communication tools used when being taught.

Structural and Functional Aspects of the Jury: Comparative Analysis and Proposals for Reform, 48 ALA. L. REV. 441, 553 (1997) (explaining that in American courts jury questioning of witnesses is typically not allowed). Although law students are questioned extensively in law school, other than voir dire, jurors do not respond to or answer directly any questions posed to them during trial and certainly no challenging questions requiring any legal analysis that are to be answered on the spot. Jurors are not supposed to determine the law at all, only find facts, because making legal determinations is an area that is supposed to be exclusively judicial. *See* Hughes v. Quarve & Anderson Co, 338 N.W.2d 422, 425 (Minn. 1983) ("The court, not the jury, determines the law of a case, and the jury decides the factual issues based on the law submitted to them.").

[61]   See Michael Sudman, *The Jury Trial: History, Jury Selection, and the Use of Demonstrative Evidence*, 1 J. LEGAL ADVOC. & PRAC. 172, 173 (1999) (explaining the functions of jury). "A jury places checks on the power of government officials to ensure that it will not be exercised arbitrarily. As a result, citizens will be protected against government oppression and overreaching. Jurors are made up of disinterested persons who make objective determinations of fact." *Id. See also* Fred H. Cate and Newton N. Minow, *Symposium: Improving Communications in the Courtroom, Communicating with Juries*, 68 IND. L.J. 1101, 116 (explaining that the functions of the jury are "to safeguard liberty, to protect against the government, to represent the community, to preserve social order, and to determine guilt or innocence.") *See also* Galves, *supra*, n. 10, at 27 (explaining that the jury functions also to assess witness credibility and render a verdict).

But these obvious active professional versus passive civic-duty

differences do not justify making legal pedagogy unnecessarily more opaque and difficult than it

need be, especially when the professor's purpose, at least at some point in the class, is to be very

clear and to promote understanding. These juror-law student differences then do not alter the

overall communication or learning point in terms of effectively conveying complex information

for the benefit of the recipient where one person, with the agreed upon leadership and

explanatory authority (the lawyer or the professor) seeks to: (1) simplify the complex, (2)

convey information in an understandable way, and (3) help the juror or law student to use and

retain that information when it counts (during deliberations or during exams, and later in the

practice of law). Although the ultimate roles of jurors and law students obviously are different in

many profound ways -- the most important being that law students need to develop the

analytical skills to apply legal doctrines to changing circumstances -- it is still true that at the

most basic levels, effective communication is effective communication, and successful learning

is successful learning.[62]   In sum, of course there are fundamental differences between the

ultimate functional purposes of law students and jurors, and law students have to be rigorously

pushed and challenged in class in a manner that jurors do not have to be in court. But the point

here is to focus on the significant similarity overlap between them when it comes to issues

involving effective communication and basic human learning and understanding and retention of

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[62]   It is important to remember, however, that attorneys use display technology not only to teach and persuade "passive" untrained lay person jurors, but they also use that same visual imagery when trying to communicate more efficaciously with legally trained judges and opposing counsel whose analytical job, very much like that of a law student, it is to actively apply the law correctly, and do so at a very sophisticated lawyerly level. Thus, visual technology not only can assist a non-legally trained juror to remember important and complicated facts, but also can be used to communicate more effectively with legally trained judges and lawyers.

information, especially during the training and exposition process of foundational material for law students.

To argue against using display technology in the law school classroom, despite how much success attorneys have with it in the courtroom with jurors and other legal decision makers, is much like arguing that a law professor should never use the chalkboard to make a point during class because law students should be expected to think beyond mere pictures or amateurish chalkboard drawings. Further, it is like arguing that a professor who at some point in class simplifies the complex for students, or reinforces a student who eventually simplifies the complex, to promote understanding, is somehow performing a function academically beneath law students. Similarly it presumes that academically-challenged jurors need special, extra visual help from skillful trial lawyers in order to make up for the jurors' allegedly missing intellect,[63] because law students obviously can be more academically and intellectually self reliant. Of course, this kind of teaching theory – where we should make learning the law as difficult, rigorous and challenging as possible because our students are intelligent, capable law students after all – carried to its logical extreme would question why we even have law professors or law classes in the first place. Indeed, if law students are really so smart and intellectually self-reliant, maybe one should ask: Do they even need us? That is, if we really want to push this idea of rigor all the way, then perhaps it can be argued that law students should be forced to rely on nothing more than their own great intellect to figure out the law

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[63] My apologies to anyone who has ever served as a juror for the elitist assumptions here vis-à-vis law students, but they are necessary assumptions to state in order to consider this argument fully.

entirely by themselves, pass the bar exam, and eventually practice law without ever having to go to a law class or ever having to intellectually engage with a law professor.[64]

On the other hand, not everything should be spelled out for law students in class. An important pedagogical question arises, when, for example, a fully engaged and responsible professor's objective in class is to be difficult, or even confusing, *on purpose*, so that students must ponder a difficult and/or even a somewhat unclear question.[65] The point in pushing students in this way is not to be difficult for the sake of difficulty; rather, it is to force students to learn how to figure out complex legal problems using their own developing analytical skills. After all, they must become independent, self-reliant lawyers someday. So, in such a classroom situation, the professor should allow the students to grapple intellectually with the question, without assistance of any sort – display technology included.

Assuming that later in the class, however, the professor eventually would want to be clear in the subsequent explanation of the question and answer thereof, whether he or she has drawn it out of a student or not, using display technology at that point may be helpful. Again, this is not to say that a professor who does not use display technology is necessarily

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[64] When a law professor disengages from a class and fails to perform his or her teaching function/duty and instead simply "throws students into the deep end" as a way of "teaching" them the law – because if students are really destined to be swimmers (lawyers), then they will figure out how to swim on their own (learn) or drown (flunk out) – it is no wonder law students may end up feeling that such a professor is useless. Why pay tens of thousands of dollars just to be thrown into the deep end, when any non-professor can do that? Certainly teaching law should require more than just removing oneself from class, leaving students to their own intellectual devices and all the while rationalizing that such non-teaching really is the best form of teaching because it "teaches" students academic self-reliance and intellectual independence.

[65] For example, a professor may want the student to address a complex legal question, expressed only verbally, and posed by a hypothetical judge, by co-counsel or even by a client. Of course, it may also just be a rationalization for asking what is perhaps just a poorly crafted overly-complex question in the first place, but regardless of the motive, I am open to the notion that there often is great pedagogical value and benefit in using purposeful obfuscation and/or lack of clarity in an attempt to push students to provide clarity, logic and understanding to the apparent confusion – sometimes referred to as "hiding the ball."

being confusing, unclear or ineffective in class.[66] However, display technology can assist in

enhancing whatever the professor is doing in class, positive or negative, clear or unclear. In fact,

if a professor is confusing or overly-complex to begin with (either on purpose, or as a function

of poor teaching), display technology will simply make it even more apparent just how

confusing that professor is being because display technology does nothing more than amplify

whatever the professor is doing in class. Of course, the opposite is true; it will make a clear

professor clearer, and thereby enhance student understanding and retention, which is the thesis

of this article. Thus, display technology can be used to form clear issues, analytical steps and

answers in class, not only to promote student recall of that information, but much more

importantly, to promote student understanding and mastery of the legal subject matter (goals

admittedly far beyond those which lawyers are attempting to accomplish in court with jurors).

The point is not to use display technology with every question and during

every moment in class without flexibility or spontaneity. Instead, the point is to recognize the

value of a method of communicating in class that can sometimes enhance learning beyond that

of merely posing verbal questions and explanations. Students obviously need to be challenged

by professors in the classroom, and when that means to ask a challenging verbal only question

without the aid of display technology, then that is exactly what the professor should do. But

when the professor is attempting to explain or clarify a concept, rather than "hide the ball" for

pedagogical reasons, display technology helps with the eventual clear information transfer, just

as it does when attorneys are explaining issues to jurors. In the end, good Socratic questions

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[66]   Nor is it to suggest that a law professor using display technology will necessarily be clear and
understandable. Great professors may still elect not to use display technology, while poor professors may elect to
try it, but to no avail. *See* Parts III. and The Conclusion, *infra*, for a full consideration of this issue.

should not be unclear or ambiguous for the sake of obfuscation and ambiguity, because their

true intellectual complexity and difficulty should be in having to identify key legal concepts and

doctrines and then competently analyzing and applying them to formulate sound answers.[67]

That said, however, display technology is not limited to clear explanatory

doctrinal information transfer of answers to "black letter law" questions. One of the best uses of

display technology is to present clearly to students a challenging legal question or hypothetical.

The legal question or the hypothetical *itself* can be displayed more clearly using display

technology than the verbal explanation of the question alone. Law school should be

intellectually challenging for students not simply because a professor can ask a tough, hard to

digest verbal-only question, but also, and far more importantly, because a professor can ask a

very challenging and complex legal question, set forth in a very clear and digestible

visual/verbal manner so that students can then focus all of their mental energy on the

sophisticated legal analysis required to answer correctly. That deeper intellectual challenge

should go beyond requiring students to struggle with the verbal-only structure of the question

itself, especially if it means the student does not even get to the critical underlying legal issue

contained within the verbal-only question.

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[67] To return to the example of what attorneys are attempting to accomplish in court, it is not that attorneys who do not use visual aids at trial are necessarily bad or ineffective lawyers, in fact they can still be very good and effective advocates without using visual aids. But using visual aids in trial tends to enhance jury comprehension and retention and thus assists in meeting the attorney's desired trial objectives. Thus, visual aids can often help a good attorney to be even better. In the same vein, law professors who do not use display technology are not necessarily ineffective teachers, but they can benefit from using display technology in class the way an attorney can at trial because display technology tends to enhance student comprehension and retention and thus assists in meeting at least some of the professor's desired classroom objectives. It is true, however, that an attorney or a professor can overuse technology or traditional visual aids. *See* Part III. But this is more a question of using a good tool correctly as opposed to incorrectly or inappropriately rather than a question of whether the tool itself is intrinsically ineffective or harmful. *See* Conclusion, *infra*.

Thus, a complex factual and legal hypothetical often can be clearly expressed with display technology so that time is not wasted on trying to clarify and digest the verbal question itself, but instead is spent entirely on trying to figure out a sophisticated legal analysis to address the clearly stated and digestible visual/verbal question or hypothetical. It sum, it is often more pedagogically worthwhile to make the question itself as clear and digestible as possible, while still making it quite legally and academically challenging for the student to answer. In this way, visual technology does not detract from intellectual rigor in the classroom. In fact, it can help focus the students' attention directly on the intellectual rigor and academic challenge contained within the substance of the clearly posed yet intellectually challenging question presented. Of course, all of this can still be accomplished without display technology (or even a chalkboard for that matter) because good law professors obviously can still be clear without using display technology, as years of experience has taught us thus far, but the point is that display technology often can help accomplish these pedagogical objectives much more clearly and effectively than without it.[68]

The overall point of this section, however, is to realize that lawyers increasingly are using display technology in courtrooms across the country to communicate with jurors in the most effective way possible (because jurors cannot be persuaded by a lawyer if they cannot fully understand the lawyer). As such, law professors ought to take note of it because we also have a similar goal of communicating efficiently and effectively with our law students (because law students cannot really be intellectually challenged by a professor and learn from that professor if they cannot first understand the professor). Although attorneys and jurors, on

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[68]   For a full discussion of these pedagogy concerns, *see infra* Parts II., III., and Conclusion.

the one hand, and law professors and law students on the other, obviously are different

groupings with some differing ultimate objectives, they still share many of the same pedagogical

courtroom/classroom concerns – communication, organization, understanding, retention, and

correct application of complicated facts and intricate legal concepts. It is therefore helpful for

law professors to consider an effective communication tool increasingly being used in the legal

profession, the very profession for which we are training and preparing our students to enter,

and see to what extent we might benefit in legal education from using the same state-of-the-art

display technology communication technique used in trial.

> D.   Visually Enhanced Communication in the Law School Classroom

More and more information is being transferred visually in society, in education

generally, and in the practice of law itself. But amid all of this technological change in the

world from which our students are now coming, and will be entering in the future as legal

professionals, the typical law school classroom at the beginning of the new millennium still

largely resembles the law school classroom of over 100 years ago with a law professor standing

in the front of the class, perhaps at a podium, asking students questions in some mixture of

lecture, Socratic dialogue and class discussion, all the while communicating almost exclusively

through linear, verbal-only means.[69]   As the mythical Professor Kingsfield of the *Paper Chase*

fame reminded us nearly 30 years ago, the purpose of this arduous verbal question-and-answer

process in law school is to "turn a bowl of mush" – referring to the "law student's brain" – into a

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[69]   *See* Steve Sheppard, *Casebooks, Commentaries, and Curmudgeons: An Introductory History of Law in the Lecture Hall*, 82 IOWA L. REV. 547, 550 (1997) (stating that the case method has dominated law school instruction for a hundred years and that most of its practitioners have "little thought of other teaching methodologies"). *See also* Robert E. Oliphant, *Will Internet Driven Concord University Law School Revolutionize Traditional Law School Teaching?* 27 WM. MITCHELL L. REV. 84 (2000) (stating that "[d]espite repeated calls for

highly trained, analytical mind so that by the end of law school, the law student has learned

"how to think like a lawyer."[70]

It has been suggested (and questioned) by more than Professor Kingsfield that

law students are supposed to learn "how to *think* like a lawyer"[71] while in law school. But if law

students should be learning how to "think like a lawyer," then perhaps it is fair for those law

students to expect their professors to know "how to *teach* like a lawyer."[72] As demonstrated

above, if cutting edge lawyers are successfully persuading juries in modern courtrooms by

explaining and simplifying (teaching) their complex cases by using high-tech computer

imagery,[73] then why shouldn't law professors be teaching their law students in the very same,

effective manner?[74] Law professors could be exposing their students to the benefit of visual,

high-tech imagery used in the legal profession, while simultaneously connecting with students at

a superior communication level by taking advantage of their students' developed ability to

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change and reform, faculty and administrators appear comfortably entrenched in an environment that functions, in
many ways, much as it did a century ago.").

   [70]   *See* Galves, *supra* note 10 at 277 n.370. (noting how, in the 1973 movie *The Paper Chase,* actor
John Houseman, starring as Professor Kingsfield, delivered a now-classic line to his first-year law students during
their first class at Harvard Law School, telling them that their brains were like a "bowl full of mush" when they
enter law school, but by the time they leave law school, they will have learned how to "think like a lawyer").

   [71]   *See* Nancy Rappaport, *"Is Thinking Like a Lawyer What We Really Want to Teach?"* 1 J. ASSN.
L. WRITING DIRECTORIES 91 (2002) (questioning what "thinking like a lawyer" really means, whether we should be
teaching whatever it is as a paramount goal in law school, and if so, addressing how exactly we should do it).

   [72]   *See supra* notes 38-70 and accompanying text.

   [73]   *See* Steven Johnson, *supra* note __, at 101 (reporting that "technology is becoming increasingly
central to the practice of law, and law schools have an obligation to train students to use technology"). *See*
discussion directly above at notes 38-46.

   [74]   *See also* Jerome A. Barron et al., *Casebook Review: A Methodology for Teaching Constitutional
Law*, 21 SEATTLE L. R. 807, 824 (1998) (citing opinions on visual aids in the classroom from law students).

      Students have told me that the utilization of charts and diagrams, in conjunction with the
      casebook and lectures, enhances their knowledge, understanding, and analytical skills. The reason

assimilate more, and intellectually difficult, information through a combination of visual

technology and verbal exposition.[75] Law schools owe a duty to their students to educate

students about the practice of law in the present and near future, and fulfilling this duty requires

the advancement of teaching techniques.[76] Students should learn not only how to use legal

technology, but such technology should be used to enhance teaching itself.

      So being completely "anti-technology" in the law school classroom context is in

a real sense being "anti-legal practice trends," "anti-societal reality trends" and "anti-general

education trends," because visual technology is exploding in all of these areas and the world

outside of legal academia is adapting accordingly. Given these changes, perhaps legal education

also needs to adapt accordingly. Evolution and adaptation are not bad words, even for cautious

law professors who highly value precedent, tradition, and time-tested teaching methodologies.[77]

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behind the students' positive response to the lecture and visual aid approaches may be due in
large part to the fact that many students prefer to learn by seeing and hearing.

[75]   This is being done in law schools to a certain extent, but of course the question is whether it is
being done enough. *See e.g.,* Maria Perez Crist, *Technology in the LRW Curriculum – High Tech, Low Tech, or No
Tech*, 5 LEGAL WRITING 93, 93-123 (1999) (discussing certain classroom technologies and assessing their
effectiveness as teaching tools); *see also* Stephen Gillers, *Getting Personal*, 58 AUT. L. & CONTEMP. PROBS. 61, 61-
72 (1995) (reviewing the use of video vignettes in teaching professional responsibility and student responses to
them); *see also* William H. Lawrence, *Diagramming Commercial Paper Transactions*, 52 OHIO ST. L.J. 267, 267-
78 (1991) (illustrating a way to visually diagram the relationship among facts, parties and corresponding legal
principles involved in complex legal theories, with multiple partners, in order to increase understanding and
comprehension); *see also* William M. Richman, *Graphic Forms in Conflict of Law*, 27 U. TOL. L. REV. 631, 631-56
(1996) (outlining the author's success at incorporating visual aids into his Conflict in Law class to increase
comprehension).

[76]   *See* MaCrate Report, *supra* n. 46. *See also* Richard. A Matasar & Rosemary Shiels, *Electronic
Law Students: Repercussions on Legal Education*, 29 VAL. U. L. REV. 909, 909-10 (1995) (asserting that "[l]aw
school graduates will be ill-prepared for their future careers if their schools do not learn to change and adapt,
especially to emerging technologies").

[77]   *See* ___,_____, 29 Val. U.L. Rev. 909, 909 (1995) (describing change in law school
like "moving a graveyard.") There is often resistance to using new developments in technology by educators.
Perhaps there is concern about teachers getting on the latest bandwagon, when it is unknown whether the new
technology can have a positive impact. Moreover, in teaching, whether in law school or elementary, teachers are
used to being in charge of their classroom. The thought of an outsider telling them how to teach is not welcomed.

This is not a call to abandon legal pedagogy as we have historically known it, but only to incorporate it fully into the technological age.[78] As such, this is not a call to join a techno fad; instead, it is a call to recognize an idea whose time has come. Law professors should care deeply about where our students are coming from educationally, and where they will be going professionally. Law professors should seriously consider the technological orientation and visual learning classroom expectations of new generations of law students.[79] Law professors should view teaching as a way to assist students in eventually functioning

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See also, Javed Maftoon, *cited in* LARRY CUBAN, TEACHERS AND MACHINES: THE USE OF CLASSROOM TECHNOLOGY SINCE 1920 51 (1986). (noting that "it has been found that teachers reject or at least resist change because of failure to recognize the need for improvement, fear of experimentation, unwillingness to give time, and disillusion or frustration with past experiences. In addition teachers traditionally tend to be conservative and usually will not be impressed by the results of investigations and research or new theories of education."). Also, take for example, the phenomenal growth rate of usage of the computer research software programs, Lexis/Nexis & Westlaw, despite initial resistance. The use of these services highlight legal educators' resistance and acceptance of technology. *See* Michael Geist, _____,11 Harv. J.L. & Tech. 141, 146. ("...the suggestion that computers could play a critical role in either legal research or in legal education would have seemed absurd to most."). But by 1970's, technology grew, and in 1990, both gave law students free passwords. Just as research with these services was resisted, then accepted, the same applies to display technology.

[78]   For example, law professors have been using the case-method, Socratic approach for over a century. This article is not a critique of that method or any kind of call for change on that score. However, consider the initial resistance to the case and Socratic methods of instruction when first introduced, and then the entrenched decision not to abandon this method, as an example of how hard change comes to the law teaching profession. We have been using this case-method, Socratic approach for over a century. Prof. Langdell, credited with creating the use, faced opposition to the case based method before it was finally accepted, 30 years later. Russell Weaver, *Langdell's Legacy: Living With The Case Method,* 36 Vill. L. Rev. 517, 543 (1991). "Once the Socratic method was accepted, the conservatism of law school has protected its use." *Id*.at 545. ("Langdell's student-centered, active learning approach eventually displaced the traditional lecture format in most law schools, and (fn omitted) law schools have been reluctant to depart from it, despite a variety of criticisms of the approach. (Fn omitted)" See supra n. 30. This is not a call to abandon it, but only to point out how difficult change and adaptation appear to be in legal academia.

[79]   S*ee also* Steven Johnson, *supra* note 30, at 94 (elaborating on how students today are dependent on using technology to aid their studies).

> [M]any student are bringing laptops into the classroom to save briefs, outlines and to take notes. Some faculty have expressed concern that students will disengage from class as they become preoccupied with transcribing class discussions or engaging in other extracurricular activities if the laptops can access a local area network of the Internet, or that the keyboard noise will significantly disrupt the concentration of other students. Despite these concerns, laptops are being used in many classrooms with few ill effects.

Id.

successfully in a modern, visually oriented and technologically dependent world.[80] After all,

our students will be 21st Century lawyers who must communicate with, and ultimately persuade,

21st Century judges, jurors, and other attorneys,[81] who will be living in an even more visually

reliant and technologically oriented world. Law students' first exposure to display technology

should not be after they have graduated from law school and are practicing law. Instead, that

exposure should be much earlier in their legal training.

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[80]   *See, e.g.* Steven Johnson, *supra* note 23, at 94-95 (describing how "many faculty have created course websites that may include the syllabus for the course, electronic 'handouts' and course materials, links to websites that are related to the material covered in the class, model exams and answers, and lecture recaps").

> Email and Internet discussion forums are also central features of many law school classes. E-mail discussions and forums allow students to continue class discussions with each other and their teacher outside of the traditional classroom. These tools also allow faculty to respond to targeted questions that students were unable to raise during class. E-mail and discussion forums can also be used to conduct short answer quizzes or to address administrative issues outside of class.

Id. at 95-96.

[81]   *See* Ronald W. Staudt, *The Future of the Legal Profession: Does the Grandmother Come With It?*, 44 CASE W. RES. L. REV. 499, 515, 519 (1994) (showing that ten years ago, "seventy-six percent of the lawyers in reporting firms have a computer or terminal near their desks," and that "[l]awyers now have access to computers and computer networks throughout the world"); A. Matasar & Shiels, *supra* note 24, at 913 ("The challenge for law schools is to find ways to optimize students' legal education by employing the appropriate technological tools. Law school graduates must come to practice with the real-life tools that will help them compete with, or even eclipse, their more traditional colleagues."); *see also* Marilyn R. Walter, *Retaking Control Over Teaching Research*, 43 J. LEGAL EDUC. 569 (1993) (suggesting that students come to law school eager and fearless to learn to use computers but inept in that regard, and that their lack of fear is attributed to a familiarity with computers that students just five years ahead of them did not have); *see also* Richard Brust, *Tete-a-Tete on Techno-trials: Courtroom 21's noted Guru Offers Advice and Prophesies for Lawyers*, 85 A.B.A. J. 78, 78 (illustrating one example of the emergence of technology into the courtroom). S*ee also* Lederer, *supra* note 25, at 38, 41 (reporting that "[t]here are now about 50 integrated high-tech courtrooms in the United States, but many more are in the design or construction stage"). "By the mid-21st century, these courtrooms should be common. Law schools will extend trial advocacy instruction to litigation technology as well as to more traditional subjects." *Id.* at 41.

PART TWO:

DISPLAY TECHNOLOGY AS A "SUPER" CLASSROOM CHALKBOARD

I.   Why and How I Use Display Technology in the Classroom: Actual Examples.

The main courses I teach at the University of the Pacific, McGeorge School of Law, are

Civil Procedure, Evidence, Banking Law, Civil Pre-Trial Litigation, and Computer-Assisted

Litigation.[82] In these courses, I use display technology extensively during each class to

accomplish several pedagogical goals. For example, I use display technology to summarize

what we covered during the previous class in order to emphasize the importance of synthesizing

the material, reinforcing it, and building upon what we have already learned.[83] Also, when

calling on a student to state the facts of a case, I use the computer to diagram the key facts of

that case as the student relates them so that the class will understand which facts are most

important.[84] Diagramming the case affirms a student's good statement of the case or

demonstrates a student's poor statement of the case if key factual elements are missing. I also

set out hypothetical questions that are variations on the case so that each student learns how to

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[82]   At University of the Pacific/McGeorge, "Civil Procedure" and "Evidence" are required courses while "Civil Pre-Trial Litigation" and "Banking Law" are electives, as they are at most law schools. "Computer-Assisted Litigation" is a new elective course I developed in 2002 and co-teach with Mr. Tim Piganelli, owner of Legal Technology Consulting based in Phoenix, Arizona. In the course, we teach law students advanced litigation methods, strategy and tactics focusing on the usage of various computer software programs to: 1) organize and manage documents and other case materials; and 2) display exhibits at trial or in other advocacy settings. The course description for Computer-Assisted Litigation is as follows: "This course will cover technical, procedural and evidentiary issues related to computer-assisted litigation. Students will learn how to use pre-trial and trial litigation computer programs and software technology by organizing a document intensive case and preparing key exhibits for trial presentation." I also have used display technology while visiting at UC Davis and Fordham Law Schools in the past and currently at Southwestern University and Denver University Law Schools where I am visiting for the 2004-2005 academic year.

[83]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence.*

apply the law of a case to different factual situations or to a different set of assumptions.[85] I

build diagrams of various legal doctrines so that students can understand visually how a legal

concept operates.[86] I present certain categorical relationships to demonstrate how richly

interrelated and interdependent the law is.[87] I also remind students of key text from the rules

and cases so that we can explore the gaps, conflicts, and ambiguities in the specific text -- an

exercise that is much easier to accomplish when the pertinent text appears in large print for the

class to see, especially when I want to highlight or emphasize certain key words or phrases.[88] I

often catalog legal elements or other legal requirements so that students can follow the logical

steps in conducting sound legal analysis.[89]

In all of these examples, the class knows which particular issue is being discussed

because they can refer to the pending issue on the screen as they wrestle with the substantive

legal issue at hand. Class discussion is more organized, focused and deeper than it is without

visual displays because verbal misunderstandings of facts, hypotheticals, and key language are

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[84]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence*.

[85]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence.*

[86]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence*.

[87]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence.*

[88]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence.*

[89]   Click here for a sample. *Footnote here will be an actual power point from one of my classes that exemplifies the general point of the sentence.*

minimized (and therefore it allows for a more efficient use of class time). Also, by using a

technological tool to enhance communication, I lead by example so that students will see the

benefit of presenting information in an effective and visual way. As a result, students may apply

the method themselves in the future.[90] These preceding examples are not a complete list of all

the ways in which display technology may be used in class, nor all of the reasons why display

technology can be used to achieve various pedagogical goals, but they do give a flavor of all the

different types of possible uses.

Logistically, in terms of the actual equipment needed to display computer-generated

images in a classroom, one needs only three basic items: (1) a classroom computer equipped

with an appropriate software display program, (2) that is connected to a quality computer

projector that can project images onto (3) a screen large enough for optimal class viewing. At

the University of the Pacific/McGeorge, each classroom has a lectern/podium with a built-in

computer, connected to the law school's main computer "network,"[91] and also to a projector

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[90] There is a saying that teaching involves more than things being taught – that students are not only "taught" something, but they also can be "caught" by something. *See* Dean David T. Link, *Symposium on Legal Education: Foreword the Times – They Are Changing*, 15 ND J. L. ETHICS & PUB. POL'Y 1, 3 (2001) (explaining that law is easier caught than taught) "Law schools shape students into skilled and decent professionals not so much by what is said in the classroom, but by the example set by the faculty. Through exposure to these role models, students absorb the skills and values needed to practice law..." *Id*. In this way, students may witness something regarding visual presentation and communication and then come to their own conclusions as to its value and intrinsic worth while practicing law.

[91] Because the classroom computer is on the law school's main computer *network*, I can access all of my files in my desktop computer located in my office from the classroom computer, this way I do not have to transport floppy discs or CD's (or even my own laptop) to class everyday and copy files to the classroom computer's hard drive. However, I think it is good practice to bring a printed hard copy of the presentation to class in the event that there is ever a problem with the hardware or software such that the images cannot be accessed or displayed during class (and on disk or CD in case the network cannot be accessed). Having a backup is important when class is about to begin because if there is a technology problem, obviously the "show must go on." In the last seven years of teaching with technology, having a hardware or software problem like this has happened to me only once – when the projector was set to play a video and I did not know how to change it over to show what was on my computer and I did not have a backup (I later learned the simple flick of an "input" button on the mouse was all that it took to remedy that particular problem).

attached to the ceiling of the room. The projector displays bright clear images of whatever appears on the professor's podium computer screen onto a very large screen above and behind the professor.[92] Lighting is best if the lights directly above the screen can be dimmed or shut off while keeping the lights on in the rest of the classroom so that the students can see to take notes and so that the class is not literally kept in the dark. In addition to these visual display capabilities, the classroom computer is connected to speakers in the classroom so that sound effects can be played for the class.[93]

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[92] University of the Pacific/McGeorge classrooms are equipped with custom made lockable podiums, 46 ½" Wide x 28 ½ Deep x 40" High. Each podium contains a microphone. Housed inside the podium is a 15-inch monitor, a Pentium 4, 2.4 kHz computer with 512 ram, 128 meg video card, Sound Card, Floppy Drive, DVD Rom Drive, and network connection. An XGA 3000 Lumen Ceiling Mount Projector provides a 100" diagonal display on a screen located behind the podium. All classroom audiovisual needs are handled by this configuration. One remote control operates all equipment functions including projector operation, mouse control & video playback of the DVD material. This makes it possible for a professor to walk around the room during class and present material without having to remain at the podium in order to operate the computer. Professors are issued a key that opens all classroom podiums. The professor logs in and is able to access all his/her personal network files. Each classroom is equipped with identical equipment, lighting adjustments and screens as to make everything standardized and simple for computer display presentation in any classroom. Some classrooms also have plasma screens for optimal viewing. The operating system is Windows XP Professional. Software available on all classroom systems is as follows: Corel WordPerfect Suite 9, containing Word Perfect, and Presentations. MS Office 2000 with MS Word and Power Point, GroupWise 5, Lexis, West Law, Windows Media Player, QuickTime Player, Real Player, and Internet Explorer. If any special software is needed beyond this, then it will be loaded on that classrooms computer. Several additional classrooms have been renovated even further and include the following: A Custom Constructed ADA compliant podium w/ Keyboard, Wireless Mouse, LCD Podium Monitor, four 42" Plasma Displays for Video Tape or DVD Playback, Connections for Laptop Computer Display, Classroom Wireless Access Point, Special Classroom Lighting & comfortable student seating. Although all of this may sound highly technical, a professor need not become a "computer-expert" to use display technology, in fact, it is quite easy to use once it is initially set up by a school's IT Department and/or Media Resources Department. So just as one need not become an expert automobile mechanic just to drive a car, one need not become a computer expert to use display technology in class. I extend a special thanks to Ron Marcroft, head of Media Resources at University of the Pacific/McGeorge, for providing this technical information about the classrooms at University of the Pacific/McGeorge.

[93] For example, video & audio clips can be placed in class computer hard drives and mapped to various function keys on that computer. During class, the professor can strike a key to play a short video clip, music clip or applause sound wave, whatever might be relevant to the student's answer. For instance, I occasionally will play the theme from "Jeopardy" if a question is particularly tough, or cheering and applause for a correct answer to a difficult answer. These clips are used as reinforcement or levities to a student's answer to a question. Also, professors can play Music CD's & MP 3 files from the classroom computer before class as a mood setter. I am a "disc jockey" of sorts as I play contemporary pop, rap, rock, classic rock and occasionally jazz or classical music on the computer CD player so that students can enjoy music just before class begins to "break the ice" (when the music

Various display programs allow a professor to create the images for class. The one I use is a Microsoft product called "PowerPoint."[94] Presentation software will allow one to prepare and manipulate the precise manner in which one wants the information displayed during class.[95] With every passing year, the technology (both the software and the hardware) is getting better, faster, less expensive, and more user-friendly.[96]

Notwithstanding the relative ease of using and learning display technology in class, law professors still might balk at the prospect of having to learn a display technology program just to

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stops, it notifies the students that class is about to begin). *Click here for example.* Obviously these uses of sound effects and music are to set a relaxed tone more than anything else and have no deep pedagogical justification, but I assume no one would judge a professor's teaching based upon the occasional telling of an unrelated verbal joke before class, for example, as long as it is would not become too annoying. Thus, criticizing technology in the classroom simply because music or sound effects can be used in a relaxing or funny way seems misplaced, unless of course the music or humor is overused or is in bad taste. Finally and perhaps most importantly, students in class can "get into the act" by showing presentations from the Internet, Lexis/Nexis, Westlaw or PowerPoint. This provides a wonderful opportunity for students to develop their own computer presentation and persuasion skills.

[94]   In addition to "PowerPoint," there is another popular computer display program manufactured by Corel (which also distributes "WordPerfect," a common word-processing program). The name of that program is "Presentations." "PowerPoint" and "Presentations" are very easy to use. Once you learn one of them, the other is easy to learn, much like learning MS "Word" is easier to learn if you already know how to use Corel "WordPerfect," or vice-versa.

[95]   *See* fns. 82-88, *supra*, for examples of how text can be layered, highlighted, animated, etc., for emphasis as well as how diagrams or even photos can be used to make points visually and dramatically.

[96]   When I began using such technology, it was before law schools started retrofitting for "smart classrooms," (*see* Nicolas P. Terry, *Bricks Plus Bytes: How "Click-and-Brick" Will Define Legal Education Space*, 46 VILL. L. REV. 95 (2001) (explaining that recently law schools have dramatically increased their IT budgets and as a result "Ethernet cables snake through our walls and data projectors have sprouted from our classroom ceilings"). At that time, I had to use my own laptop computer and connect it to a projector, which I would wheel into class on a cart and project images onto a portable screen that I also would have to transport and set up. I was a visiting professor at U.C. Davis Law School in 1996 and Fordham Law School in 1997. Neither school at that time had retrofitted any classrooms for technology, although both have done so since. I also had problems with lighting that had to be addressed, such as how to shut off the lights near the screen so as not to "wash out" the projected image while keeping at least some of the lights in the room on so that students could see to take notes, and not be tempted to fall asleep if it got too dark. To get around classroom lighting configuration problems, a very bright, high quality projector can project visible images even in full classroom light.

teach.[97]   But a professor does not have to become a "computer expert," as display software

programs do not require an inordinate amount of time, expertise or effort to learn and master.[98]

Thus, one need not become an expert clock engineer in order to tell time.

However, to the extent display technology does require some preparation on the part of

the professor to learn how to use the technology, an analogy is helpful here. Part of our teaching

and scholarly function as law professors is to engage in writing – the writing of books, articles

or other scholarly works.[99] This writing component, as a practical matter, requires professors to

learn how to use a word-processing program (unless they type their articles on typewriters or

write them out longhand and then have a secretary transcribe them). Professors have adapted to

word processing programs to produce legal scholarship without too much complaint or

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[97]   I have no empirical data on this point so it is again anecdotal, but over the years, many professors have related to me that the extra work and time involved in having to learn another software program such as PowerPoint and to create presentations for each class as reasons not to adopt the usage of display technology in their classrooms.

[98]   *See* Deanne C. Siemer et al., PowerPoint for Litigators 17 (2000), at xv (stating that "PowerPoint is fast and easy" and that using it does "not require extensive computer experience"); *See also* James B. Pepe, *Going on Trial Means Going High-Tech*, NAT'L L. J., March 19, 2001, at B9 (stating that PowerPoint is easy to learn and use); *See also* Jinny Gudmundsen, *Kid Picks: PowerPoint, Plus Add-On a Hit in Class*, GANNETT NEWS SERVICE, May 13, 2002 (explaining that PowerPoint has made its way into schools because it is easy to use). "PowerPoint's step-by-step interface makes creating a multimedia presentation a breeze." *Id*.

[99]   Most law schools have requirements that in order for junior professors to receive promotions and eventually tenure, they must satisfy a scholarship/writing component where the professor is judged on his or her scholarship production. *See* Tracey E. George, *Court Fixing*, 43 AZ. L. REV. 9, 41 (2001) (stating that law professors gain tenure by writing law review articles that take a particular approach to a legal issue.); *but see also* Kenneth Lasson, *Commentary: Scholarship Amok: Excesses in the Pursuit of Truth and Tenure,* 103 HARV. L. REV. 926, 927 (1990) (proposing that for professors "the goal of publication is much less to find answers than to avoid perishing in pursuit of promotion and tenure").

resistance, and presumably the investment of time in learning a word-processing program has

been worth it.[100]

Similarly, if law professors want to conduct helpful computerized legal research, then

they must learn how to use a computerized legal research program such as Lexis/Nexis or

Westlaw,[101] instead of relying exclusively on manual research digests.[102] And if professors want

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[100] *See* Saxter supra n. __ , at ___ (stating that virtually all law school professors use computer word processing programs to write). Of course, this may be due in part to the fact that law professors may have already spent the time learning word processing programs in other contexts, such as consulting or practicing law or as a student themselves before becoming a law professor.

[101] *See* Robert C. Berring, *Collapse of the Structure of the Legal Research Universe: The Imperative of Digital Information*, 69 WASH L. REV. 9, 28-31 (1994) (specifying the ways in which computerized databases such as Westlaw and Lexis have revolutionized legal research).

> LEXIS and Westlaw provide the researcher with the capacity to perform word searches on the full text database using Boolean logic. The tool of Boolean logic, when combined with the existence of the full text of judicial opinions, means an entirely different form of organizational logic can be brought to bear to find materials. Boolean logic allows the researcher to look for specific words or combinations of words in a document, specifying proximity if desired. By allowing the user to search for specific terms or roots in combination with other terms or roots, or in specified proximity to them, a whole new logic of organizing the legal information system has been introduced. Instead of a pre-coordinated index into which all data is funneled, the database now stands open for post-coordinated indexing by the searcher. *Id.* at 30.
> Once both on-line systems began to supply each student at each ABA accredited law school with free passwords with 24-hour access, the whole pattern of law student information use changed. *Id.* at 30-31. Part of this change is due to the generation gap in information use. The typical law student of today is not a product of the culture of the book and is just as likely to use an electronic source as a print source. But a large part of it is the convenience of use. Lexis, with its glorious NEXIS database offering full-text access to a world of legal and non-legal information is especially seductive to the student. *Id*. at 31.

However, if law professors know how to use these legal research software programs already, they probably learned them before becoming a professor. Also, many law professors may rely on their research assistants to do this kind of computerized research so they do not have to know it themselves. Regardless, the point remains that *someone* on behalf of the professor is doing more computerized research now than manual research to help the professor meet his or her professional responsibility as a scholar.

[102] Legal encyclopedias such as American Jurisprudence Second and Corpus Juris Secundum cover all areas of law and are updated regularly. Larry L. Tepley, LEGAL RESEARCH AND CITATION (1990) 75. Annotations such as American Law Reports include judicial opinions with accompanying explanatory notes. *Id.* at 100. West Publishing Company publishes state, regional, and federal digests that include headnotes organized by topic and key number. From these digests a researcher can locate judicial opinions that fall under the desired topic and key number. *Id*. at 32. For a complete explanation of manual research resources, *see id.* The disadvantage of manual searches is that not all of the actual text of judicial opinions or other searchable text is considered, rather it is only

to communicate instantaneously with their class or colleagues in written form, then they have to learn how to use e-mail,[103] instead of writing letters or handwritten notes. Finally, if professors want to have access to instant news or information, then they must learn how to access and use the Internet,[104] instead of relying on magazines or even daily newspapers.[105]

Accordingly, just as one would advocate to legal scholars that learning a word processing program could enhance their important scholarly function as writers/authors, and that learning other computer programs would enhance their professional and scholarly research and communication functions as professors in general, I advocate the use of computers and display technology to enhance our classroom teaching. It just seems odd that in many professorial and

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the way in which a digest author has decided to categorize possible sources of law. Also, time and convenience issues are more acute when a researcher must physically search for books or materials in a library, rather than searching electronically and locating applicable cases instantly from their desktop computers.

[103] *See* Saxer, supra n. __ , at ___ (explaining that recently Westlaw and Lexis have developed online support services for legal educators, which "facilitates communication with students by allowing online uses such as posting syllabi, course assignments, documents, presentation materials, and maintaining class discussion lists."). "TWEN" (The West Education Network) is one such popular product (Lexis/Nexis also offers a similar product). *See also* Terry, supra n. __ , at 113 (stating that most communication between law school students and law school professors takes place electronically, mainly through email).

[104] See Berring, supra n. __ at 29-30 (explaining that online information systems have revolutionized access to news and information).

> Materials that were once held in the sub-basements of only the best law libraries are now as easily retrieved on LEXIS and Westlaw as a Supreme Court decision. International materials are also increasingly available. The same is true of secondary sources and even non-legal research sources. The researcher who turns on her LEXIS subscription today is the virtual equivalent of the researcher walking into the Harvard Law Library in 1960. The rare materials are not there, but much non-legal information is, and it is a good trade-off. Thus the databases have expanded the literature that is easily accessible. *Id.*

[105] The Internet has constant news updates throughout the day, making it the most up-to-date news service beyond print media. *See* Fedwa Multi-Douglas, *From Law to Content in the New Media Marketplace,* 90 CALIF. L. REV. 1739, 1760 (2002) (explaining that there are so many internet sites devoted to news that their number is impossible to calculate). "The web houses web-only sites as well as many sites linked to non-Internet content providers such as newspapers, magazines, television stations, and advocacy groups. Internet portals such as Yahoo! and America Online offer standard news summaries. Some sites survive simply by linking with other news sites." *Id.* For example, see CNN.com, an online news network that "is updated continuously throughout the day" and is staffed around the clock.

scholarly contexts law professors have taken the time to learn how to use computer technology, and yet most law professors still do not use computer technology in what is arguably the most important professorial function in law school -- classroom teaching/pedagogy.

II.   My Personal Evolution Regarding Visual Aids in Teaching.

My recognition of the power of visual aids in the classroom began long before I became a law professor and even preceded the time when I was a practicing attorney. My realization had its genesis when I was a student myself.[106]

A.   Life as a Student.

From my time as a kindergartener in Pueblo, Colorado, all the way up to my years as a law student, I found the most effective teachers to be those who peppered their explanations of difficult concepts with specific examples that provoked visual images for my mind's eye.[107] This technique allowed me to assimilate complex concepts by decoding words *and* by looking at their meaning through a familiar visual prism, aiding my overall learning in at least three ways.

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[106]   It is important for professors to empathize with students, or at least be able to look inward and consider our own experiences as students, in order to look for insights about teaching. *See* Jennifer P. Lyman, *Getting Personal in Supervision, Looking for that Fine Line*, 2 CLINICAL L. REV. 211, 219 (1995) (arguing that professor empathy towards students "guide[s] the exercise of power in a relationship with an inherent power imbalance" and "provides a necessary check on the exercise of paternalism"). *See also* Joshua D. Rosenberg, *Symposium: Teaching Values in Law School: Teaching Empathy in Law School*, 36 U.S.F. L. REV. 621, 633 (2002) (finding that professors displaying empathy are better able to educate than professors who possess more knowledge but do not display empathy).

[107]   *See* Vernellia R. Randall, *The Meyers-Briggs Type Indicator, First Year Law Students and Performance*, 26 CUMB. L. REV. 63, 87 (1996) (noting that many students learn best when they are given concrete, specific examples that "allow them to move to abstract theory in a step-by-step progression.") According to one survey, 48.1% of students qualify as "sensing" on the Meyers-Briggs scale. For these students, presenting "principle[s] . . . or rule[s] followed by many examples of variations in applying it" is particularly effective. *Id.* at 86-87.

First, I was able to learn the concepts more completely, as those teachers' visual aids took me to a deeper contemplation of the concepts. Second, the concepts I learned from processing abstract language were reinforced by my perception of those same concepts in visual imagery that engaged another facet of my mind and thereby reinforced my overall learning. Third, my retention improved as the concepts I was learning were categorically associated with other mental/visual images already embedded in my memory.[108] Feeding complex information to the mind through verbalization and imagery makes use of two of the most important means of understanding – sight and sound, which are most effective when used in tandem. Indeed, one of the most important lessons in clear communication that school children learn is the art of "Show and Tell,"[109] and as course subjects became more complex and profound, I found there should be even more reason to use two senses in teaching and learning, instead of just one.[110]

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[108]   *See supra* n. __ (discussing the power of visual aids in improving comprehension). *See also* Paula Lustbader, *From Dreams to Reality: The Emerging Role of Law School Academic Support Programs,* 31 U.S.F. L. REV. 839, 850 n.36 (stating that "It is …[the] binding of declarative and associational knowledge within a coherent memory structure that turns otherwise disjointed bits of information into meaningful patterns of thought and accounts for systematic efforts in human processing.").

[109]   *See* Monica Everett-Haynes, *Show and Tell Goes Modern, Lessons in Communication Transform Old School Exercise*, THE SEATTLE POST-INTELLIGENCER, Dec. 3, 2002, at B3 (reporting that many elementary school teachers believe that show and tell sessions improve student communication and independence). According to one teacher, show and tell "expands what they [students] are learning in the classroom and helps them to make connections between home and school." *Id.* The point is that even elementary school teachers understand the importance of visual/verbal communication.

[110]   The educational value of employing sight/graphics in addition to sound/verbiage was not always clear to me. When I first read children's books (with light text and many illustrations) and then was exposed to high school and college books (containing mostly complex text), I of course assumed that non-textual illustrations must have been for children who had to be shown pictorially what was being written about because children were deficient readers who could not yet develop a satisfactory mental image from the textual concepts alone, while older more sophisticated students could. But upon further reflection, I also noticed that certain books written for adults such as encyclopedias, reference manuals, recipes, how-to-books, books that actually attempt *to teach* something to the reader, used illustrations extensively. Moreover, at the highest and most complicated academic levels of science, math, economics, medicine, business, I saw that such learned textbooks all used complex diagrams, drawings or even photographs, whereas books that merely entertained, such as fictional novels, used only words, with no explanatory illustrative diagrams. Thus, the argument that visual aids "dumb down" or are non-academic (*see e.g.*, Janice C. Griffith, *The Dean's Role in Managing Technology*, 33 U. TOL. L. REV. 67, 76 (2001)

Even as a child outside of a formal academic setting, I can recall that when building a model airplane, for example, the written instructions explaining the various steps in putting the model together often did not really make sense to me until I also saw the visual diagram of how the parts of the model fit together. When I coupled the diagram with the written instructions, the written instructions made much more sense to me. This is not to say that I would have wanted *only* the diagram, because my point is not that one should merely *replace* the verbal with the visual or even say that the visual is more important than the verbal. Rather, this "double dose" of information (both verbal *and* visual) on the same thing (how to assemble the model airplane) *working together,* made it quite possible, and even easy, for an otherwise not-so-mechanically-inclined child to build a model airplane. In a sense, it gave me two simultaneous opportunities (sight and sound), through two different media (verbal and visual), to learn what I needed to know in order to complete the desired objective. Although law is often intangible, and model airplanes are tangible, the art of teaching involves simplifying the complex, and making even intangible difficult concepts more understandable and accessible as tangible, concrete ideas.[111]

(explaining that many law professors, who were taught in classrooms without visual aids, believe that using PowerPoint presentations and other technologies overshadow the Socratic method of teaching)) seems to be backwards, as exactly the opposite seems more valid. *See* Part III, *infra,* addressing this specific critique in detail. It also occurred to me that a novel is by definition the art of creating mental scenes, and even whole make-believe worlds and characters, through the magic of words only, but of course the main purpose of a novel is to entertain, not to teach a complicated professional subject to a neophyte student. In any event, the argument that illustrations used along with words are for non-academic or less-intellectually challenging works (by the way, try telling that to a quantum physics professor!) seems at best to be an uninformed overstatement, and at worst entirely backwards.

[111] *See Randall, supra* note __; *see also e.g.* Peter Dewitz, *Reading Law: Three Suggestions for Legal Education*, 27 U. TOL. L. REV. 657, 672 (1996) (stating that students' comprehension will improve if professors "help students understand the basic concepts and structures of ideas" before the students read.); *see also* Roger Bernhardt, *Teaching Real Property Law as Real Estate Lawyering*, 23 PEPP. L. REV. 1099, 1187 (1996) (indicating that a professor who complicates rather than simplifies a concept is "the last thing unconfident first-year students need").

As I advanced in school, I saw that this reinforced, visually enhanced learning was accomplished most often by the teacher's use of a chalkboard, or even by physical hand gestures and in class-physical demonstrations.[112] In many ways, providing a visual aid is much like providing a helpful metaphor or analogy to help explain an idea.[113] This use of analogies and metaphors should not be considered a non-academic oversimplification that is beneath legal education. After all, legal analysis itself often employs the art of "reasoning by analogy,"[114] as judges and lawyers use metaphors and analogies all the time in their judicial opinions, closing

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[112]   For example, in addition to usage of the chalkboard, a teacher walking to different parts of the room to connote different step-by-step procedures that must be followed would be a way to teach visibly/physically without using the chalkboard. *See* Sherry Jordan, *Treat Students to a Moving Experience*, THE TIMES HIGHER EDUCATION SUPPLEMENT, JULY 20, 2001, at 24 (explaining that conscious use of body language and space allows teachers to more creatively and effectively communicate with students). This simply underscores the overall point that we limit our communication avenues if we choose to communicate ONLY through verbal language without the benefit of supplemental visual imagery and demonstration. This is also demonstrated by the importance placed upon demeanor evidence and the strict limits traditionally placed upon trial use of depositions and transcribed testimony taken in other proceedings. The opportunity of the trier to observe the demeanor of witnesses is a principal basis for the deference accorded by reviewing courts to factual determinations of trial courts and hearing officers. *See* Olin Guy Wellborn III, *Demeanor* 76 Cornell L. Rev 1075 (1076-1077) (explaining the importance the law places on demeanor evidence). "The way a man behaves when he tells a story -- his intonations, his fidgetings or composure, his yawns, the use of his eyes, his air of candor or of evasiveness -- may furnish valuable clues to his reliability. Such clues are by no means impeccable guides, but they are often immensely helpful. So the courts have concluded." *Id*. (citations omitted). It is therefore important to realize the significance and potential use of visual imagery, demonstration, and even demeanor in teaching.

[113]   *See* Todd Brower, *A Stranger to Its Laws: Homosexuality, Schemas, and the Lessons and Limits of Reasoning by Analogy*, 38 SANTA CLARA L. REV. 65, 71 (1997) (explaining that reasoning by analogy is a method of learning new concepts through past experiences). In reasoning by analogy, individuals "refer to [their] ability to extract meaning from [their] interactions with [the] environment or from cases, and apply those understandings to novel situations").

[114]   *See* Scott Brewer, *Exemplary Reasoning: Semantics, Pragmatics, and the Rational Force of Legal Argument by Analogy*, 109 HARV. L. REV. 925, 926 (1996) (detailing the reasoning process of "reasoning by analogy," which has "special prominence in legal reasoning"). *See also* Steven M. Quevedo, *COMMENT: Formalist and Instrumentalist Legal Reasoning and Legal Theory*, 73 Calif. L. Rev. 119, 142 (1985) (explaining that reasoning by analogy involves a judge focusing on a relevant similarity or difference between two situations). "[Reasoning by example] is a three-step process described by the doctrine of precedent in which a proposition descriptive of the first case is made into a rule of law and then applied to a next similar situation. The steps are these: similarity is seen between cases; next the rule of law inherent in the first case is announced; then the rule of law is made applicable to the second case." *Id*. at 142 (quoting E. Levi, An Introduction to Legal Reasoning, 1948).

arguments and legal briefs.[115] Just as the appropriate analogy or metaphor creates a desired

image in the mind of the listener (or reader) to help that person to understand a specific point, a

visual aid does the same thing. In fact, the tangible visual aid is more direct in creating that

desired mental image because it can be controlled more effectively by the presenter and is easier

to create than an indirect mental picture constructed abstractly with words alone, which may or

may not create the exact desired mental image in the mind of each audience member as that

specifically contemplated and intended by the presenter.[116]

       For many years now I have emulated those teachers who were most effective in

using visual aids in teaching me. Of course, not all of my students are going to be like me and

obviously I realize people vary widely, so in looking beyond my own student experience, I

discovered that I was not alone in how I learned because many students benefit from visual

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[115]   *See e.g., U.S. v. Bestfoods, et al.,* 524 U.S. 51, 64, 69 (1998) (utilizing two analogies that draw upon visual images for their poignancy—"piercing the corporate veil" and director and officer "hat changing"—in discussing the liability of a "parent" corporation). *See also Wong Sun v. United States*, 371 U.S. 471 (1963) (analogizing otherwise proper statements and tangible evidence gathered as a result of an initial constitutional violation at a crime scene to tainted "fruits of a poisonous tree."). *See also Republican Party of Connecticut v. Tashjian*, 599 F. Supp 1228,1235 (1984) (explaining Justice Brennan's "ratchet theory" of Constitutional Law: Congress may pass laws that strengthen rights under the Due Process and Equal Protection Clauses of the 14th Amendment, but they may not pass laws that weaken those rights). *See also Nunley v. City of Los Angeles*, 52 F.3d 792, 796 (9th Cir. 1995) (noting that there are certain presumptions in evidence law entitling the proponent to an assumption that are like "bursting bubbles" in that they disappear as presumptions once rebuttal evidence is introduced).

[116]   *See* Galves, *supra* n. 10, at 187 (explaining that a speaker can better control what mental images a listener conjures up by using specific words and simultaneously displaying a picture of the desired mental image.) For example, if a speaker says the word "dog," each listener will likely picture a different type of dog in his mind. In contrast, if a speaker uses the word "collie," there will likely be more uniformity among the mental images the listeners conjure up. Thus, the use of a specific word such as "collie" makes it more likely that a communicator will exactly convey his desired message (mental image). But of course, the most detailed and specific information is best communicated with an actual picture of a specific collie rather than a long, detailed verbal description of a particular collie with seemingly infinite individual characteristics — in short, the exact tangible image that the speaker/writer wishes to communicate is plain for all to see. *Id.* It is why, quite literally, "a picture is worth a thousand words." *See* Ralph Keyes, "NICE GUYS FINISH SEVENTH": FALSE PHRASES, SPURIOUS SAYINGS, AND FAMILIAR MISQUOTATIONS (1992) (documenting the history of the phrase). "This saying [a picture is worth a thousand words] first appeared in a 1921 . . . attributed . . . to 'a famous Japanese philosopher.' Six years later, Barnard revised the saying to read 'One picture is worth ten thousand words,' and then republished it in the same magazine as a 'Chinese proverb." But whatever its checkered origin, it clearly has resonance and poignancy here.

reinforcement of whatever particular idea or concept is being taught.[117] In short, I, like many

professors throughout academia, became sold on the use of the chalkboard and visual aids in

teaching,[118] but I did so as a student long before ever becoming a law professor.

        B.   <u>Life as a New Law Professor.</u>

With all this background in mind, when I began teaching law in 1993,[119] before

each class I wrote a class outline on the chalkboard setting forth the legal concepts and cases we

were going to cover during that particular class including key text from the Rules of Civil

Procedure, Evidence, or various Banking Regulations, as well as poignant text from the cases

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[117]   *See* M.H. Sam Jacobson, *A Primer on Learning Styles: Reaching Every Student*, 25 Seattle Univ. L. Rev. 139, 152 n. 50 (citing a study finding that a steadily rising 30% of law school students are visual learners; that is, they learn best through diagrams and charts rather than written text.) Significantly, however, visual learners disproportionately have ended up at the bottom of law school classes, suggesting that perhaps it is because they are not being taught by a majority of their law professors according to their visual learning style. *Id*. Although not yet a majority, the trend is moving in that direction and, in any event, it seems irresponsible to mostly ignore the dominant learning style of nearly a third of all law students. Also, even if it is not the dominant (primary) learning style for two-thirds of law students, those two-thirds can still benefit by the added communication effectiveness of visual learning.

[118]   *See* William E. Becker and Michael Watts*, Teaching Methods in U.S. Undergraduate Economics Courses*, THE JOURNAL OF ECONOMIC EDUCATION, JUNE 22, 2001, at 269 (conducting a five-year survey of undergraduate economics courses and finding that the median amount of class time teachers spend writing text and graphs on the chalkboard is 83%). *See also* Lawrence L. Smith, *The Future of Technology in Teaching*, USA TODAY MAGAZINE, MARCH 1, 1999, at 26 (explaining that many teachers' primary teaching tools are chalk and a blackboard). While there do not appear to be statistics documenting chalk board usage in law school classrooms, many authors have acknowledged its general use and acceptance. *See infra* notes 42 and 43.

[119]   I began teaching Civil Procedure, Evidence and Banking Law in the fall of the 1993-1994 academic year at University of the Pacific/McGeorge. However, my first actual teaching job was at the undergraduate level beginning in 1986. During my third year of law school, I was a teaching fellow at Harvard University where I taught Principles of Economics (called "Ec 10"). Later, from 1987 to 1992, while practicing law full-time, I taught a class at Colorado College in the Political Science Department as a visiting/adjunct professor called "Law and Social Justice." In these undergraduate courses, I used the chalkboard extensively and occasionally distributed handouts, but at that time (late 80's and early 90's) I never used any type of computer display technology.

we were studying. I also would draw Venn diagrams[120] or other pictures to clarify particularly

difficult legal concepts or factual situations.

For example, in Civil Procedure, I often drew timelines (to help explain how to

calculate when pleadings or discovery requests are due),[121] or maps of the United States with

pictures of a defendant's business activities/sales therein (to explore personal jurisdictional

issues).[122] In Evidence, I used arrows of statements from one declarant to another and finally to

a witness (to demonstrate hearsay, and hearsay within hearsay),[123] or I drew Venn diagrams to

show the overlapping nature of character and credibility.[124] In Banking Law, I drew monetary

flow charts (to model complicated financial transactions between various business entities,

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[120]   *See* Samuel C. Damren, *The Utilization of Syllogisms in Contemporary Legal Analysis: Law, Logic, and the Boolean Universe*, 1998 DET. C.L. REV. 63, 88 (1998) ("Venn diagrams utilize a . . . compressed geometric perspective to formulate the various possible relationships between groups. In Venn diagrams, . . .distinct groups . . . are represented by overlapping circles.")

[121]   Click here for a sample. *Footnote here will be an actual scanned photograph of a chalkboard drawing that exemplifies the general point of the sentence.*

[122]   Click here for a sample. *Footnote here will be an actual scanned photograph of a chalkboard drawing that exemplifies the general point of the sentence.*

[123]   Click here for a sample. *Footnote here will be an actual scanned photograph of a chalkboard drawing that exemplifies the general point of the sentence.*

[124]   Such an attack is allowed under Federal Rules of Evidence 608 and 609. Click here for a sample. *Footnote here will be an actual scanned photograph of a chalkboard drawing that exemplifies the general point of the sentence.*

lenders and guarantors, debtors and creditors, and compare it to the language of the applicable

rule or statute).[125]

Of course, many if not most law professors already employ the chalkboard like

this to some degree in their classes.[126] Interestingly however, most law professors – even those

who do not use the chalkboard – do not have to be convinced that using the chalkboard in class

can be helpful, or at least that using the board is not a controversial pedagogical teaching

technique.[127]

Nevertheless, using computer display technology seems to present more

pedagogical concerns for some.[128] I submit, however, that between the two, display technology

should be the classroom technique that is embraced as the more effective teaching tool over

usage of the chalkboard or other non-automated visual aids (hard copy flow charts/handouts).

Thus, it is not a risky anti-chalkboard scheme that I am advocating by using computer display

technology in the classroom. If anything, display technology is simply more of a glorified,

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[125]   Click here for a sample. *Footnote here will be an actual scanned photograph of a chalkboard drawing that exemplifies the general point of the sentence.*

[126]   *See* Robin A. Boyle and Rita Dunn, *Teaching Law Students Through Individual Learning Styles*, 62 ALB. L. REV. 213, 229, 232, 237 (1998) (describing ways that professors use the chalkboard—such as displaying key concepts and words or having students themselves write on the board—to appeal to different learning styles.)

[127]   *See* James Eagar, *Comment: The Right Tool for the Job: The Effective Use of Pedagogical Methods in Legal Education*, 32 GONZ. L. REV. 389, 410 (1996) (explaining that law professors commonly use chalk and a blackboard in their classroom instruction but not more sophisticated audio-visual aids). *See also* Griffith, supra, n. ___ , at 72 (stating that since professors regularly use the blackboard during class, switching to electronic blackboards or slide projectors is not a major leap).

[128]   *See* Part III, *infra* (exploring various critiques of using display technology). *See e.g.,* David M. Becker, "*Some Concerns about the Future of Legal Education*," 51 J. LEGAL EDUC. 469 (2002) (warning those of us in the legal teaching profession of a disturbing "technology takeover" trend the author recently has witnessed, drawing on his 41 years of law teaching experience, and how we might be sacrificing true learning for fancy methods of information transfer such that our classrooms will suffer because the medium is becoming the message).

super chalkboard that should be embraced as a wonderful extension of the traditional chalkboard, rather than as some technological threat to traditional, Socratic teaching methods.

C.   From the Chalkboard to Class Handouts to Display Technology.

Although I believed in the value of the chalkboard when I first began teaching, I became convinced that providing students with handouts of diagrams and flow-charts was even more helpful and efficient in transferring complicated information to students. However, I began to have many pedagogical concerns about both using the chalkboard and prepared handouts in class. Regarding the chalkboard, I was concerned with the illegibility and lack of clarity of my chalkboard writing and drawings, as well as the inefficient use of valuable class time taken to write on the board, especially when I tried to write neatly to solve the legibility problem. Although prepared handouts of diagrams and flow charts solved those particular legibility and class-timing problems, handouts often foster student passivity during class. By having a diagram of an entire analysis or flow chart of a case or legal issue in front of them at the beginning of class before that analysis is built or layered step-by step, students tended: (1) not to follow each layered element closely as each of those elements were being discussed because students could wander to, or be distracted by, other elements of the analysis in the handout not yet being addressed; and, (2) not to write out as many notes during class because most of the noteworthy information was already contained in the pre-packaged handout and therefore students could take that information with them after class. As a result, I lost some control over the class because of the way in which students were using the handouts – often reading the "punch-line" before I got there or not paying close attention during class because they could view the diagrams or charts or lists on their own.

I have found that the use of display technology addresses each of these concerns while still allowing me to take full advantage of the power of visual learning in the classroom and do so in a more modern and familiar way for today's students.[129] Each of these concerns and how display technology addresses them is set forth in more detail below.

1.   Chalkboard Illegibility, Lack of Clarity and Inefficient Use of Class Time.

Although the chalkboard is great for emphasizing points, listing concepts and making comparisons, etc.,[130] I have found that students often have a difficult time reading my handwriting, especially in a larger class where part of the problem is simply being able to see the chalkboard clearly. When I wrote large enough for all to see, I ran out of chalkboard space, necessitating frequent erasing. When I drew diagrams, they often were not nearly as neat, clear and professional looking as I would have liked for them to be. My diagrams appeared amateur and the chalkboard often was messy. When I took the time to write slowly to avoid these problems, I lost valuable class time. I also experienced a physical teaching disconnect with the class as I faced the board while writing. This disconnection occurred even when I spoke loudly to stay connected with the class, as I wrote on the board with my back to the class,

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[129]   For an analogous discussion on why attorneys have moved from chalkboards and overheads to computer displays *see* Andrew Taslitz, *supra* note 46, at 11, *citing* Frank D. Rothschild, Deanne C. Siemer, and Anthony J. Bocchino, "*Easy Tech, Cases and Materials on Courtroom Technology*" (NITA 2001), at 3: "The laptop computer has solved most of the problems inherent in older methods. The blackboard presents a near impossibility of adequately preserving for the record every action. Hand drawn flip charts are sometimes hard to read and favor the lawyer with good handwriting and an eye for perspective in drawing. A computer provides clear type and elegant design capabilities. Document blowups and photographic enlargements are time-consuming and expensive to create; and once completed they cannot be changed. A computer can produce blowups and enlargements virtually cost-free with flexibility to change at any time. The lightweight, high-powered digital projectors also solved a principal problem with earlier technology. Slide projectors and overhead projectors require dimming of the lights in the courtroom. Newer digital projectors that take images from a computer have the projection strength to work well in full daylight."

[130]   *See supra* text accompanying notes 106-126 (discussing the use of chalkboards).

or like a T.V. weather reporter, turned around in a contorted manner in order to remain facing the class.

Display technology solved all of these problems. Because learning the law is difficult enough, it was a waste of time to require modern computer-savvy students to look up, squinty-eyed, at the chalkboard from behind their laptop computers and spend any mental energy at all attempting to decipher poor chalkboard writing and/or unclear drawings. This legibility problem is an unnecessary hurdle to place in front of students who should be concerned only with attempting to understand the substance of the law, not struggling with chalkboard legibility and clarity issues, especially when that problem is so easily solved. Again, trial attorneys know this as they are leaving behind chalkboards or butcher-block paper and magic markers for computer display technology[131] because attorneys know the importance of providing jurors with clear, legible, professional computer-generated visual aids in court.[132]

Law professors already understand the importance of computerized clarity and enhanced legibility in other learning contexts *outside the classroom*. For example, professors would not expect students to read casebooks and law review articles that had been written out in longhand using pen and paper. Neither would professors expect students to look

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[131]   *See* Anthony J. Bocchino, *Ten Touchstones For Trial Advocacy—2000*, 74 TEMPLE L. REV 1, 16 (2001) (recommending that trial attorneys "get on board" with display technology since its use in trials is quickly becoming "the norm.") Because they are "faster, easier, and less expensive," computer-generated visual aids provide advantages over chalkboards, flip charts, and poster bards. *Id.* at 18.

[132]   *See Galves*, supra note 10, at 186-193 (explaining the communicative value of using computer-generated visual aids in court); s*ee also* Diana D. Ratcliff, *Using Trial Consultants, What Practitioners Need to Know*, 4 J. LEGAL ADVOC. & Prac. 32, 46 (2002) (stating than "[w]ith respect to courtroom presentations, all sources agree that whether you are presenting your case to an arbitrator, a judge, or jury, well-crafted visuals are a must); *see also , supra* note --, at 18 (explaining that "[t]rial lawyers have always known that visual aids and the displays of exhibits are important. And in fact, trial lawyers have been successful in communicating visually to juries. All that has changed is the medium.").

past any legibility penmanship concerns with such handwritten reading materials, by reasoning that although having the author type the words using a computer word processor and having them professionally published would make it easier for modern students to read and work with the materials, such computer-generated documents are a "modern luxury" that really are not necessary in order to teach the law. This may be true – after all, students could read handwritten materials and still learn much law – but the point is that a potential lack of clarity due to illegibility (not to mention the lack of professionalism with using the hand-written materials) should never be a problem when such an easy solution is literally at all of our fingertips. With every passing year, law students increasingly will come to expect display technology in the classroom consistent with the way in which they now expect professors to use type-written, instead of hand-written, books and reading materials.

Another simple analogy is helpful here. In a large classroom with many students, a microphone may be necessary in order to enhance a student's ability to hear what the professor is saying. It would seem a bit absurd to suggest that a professor who uses a microphone, which is a form of technology after all, would be a professor using an unnecessary modern classroom luxury. Instead, it would and should be seen for what it is, a tool to enhance and make more accessible whatever the professor is saying so that the professor's words can be more easily heard and therefore understood. But a word of caution: if the professor is unintelligible to begin with, then all the microphone would do is make it clear to all that the professor is unintelligible. However, if the professor is intelligible to begin with, then a microphone would make it more likely that students would have access to that clarity because they could better hear what the professor is saying. In short, if something is important enough to

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write on the chalkboard during class, then it should be done in a manner that is as clear as possible and current technology makes a high degree of clarity possible.

Surely there is no pedagogical value in having students struggle with such an elementary lack of clarity issue – chalkboard penmanship – in the classroom. I have yet to meet a professor, even the most "Luddite,"[133] anti technology professor there is, who would argue that their own chalkboard penmanship is more legible than that which can be generated with a computer, or that to be a good lawyer, students should be skilled in the fine art of deciphering poor chalkboard penmanship (with the possible exception of cross-examining a handwriting expert). Again, to analogize to the use of microphone in a large classroom, it is inane to argue that there is a pedagogical benefit in *not* using a microphone in class because it forces students to struggle and strain to listen more carefully in class (I suppose for that matter we also could turn up (or down) the heat in class, or perhaps not allow students to use the restroom, so that students would be forced to learn how to think in tough circumstances). It is also ludicrous to argue that a professor who uses a microphone in class to make it easier for the students to hear is somehow "coddling" lazy law students or is necessarily failing to be intellectually rigorous. Allowing unnecessary legibility/clarity obstacles in class has nothing to do with legitimate intellectual, academic rigor. In fact, allowing such obstacles in class actually detracts from intellectualism because it is nothing but an unnecessary distraction and even

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[133]   A "Luddite" is defined as: "Any of a group of British workers who between 1811 and 1816 rioted and destroyed laborsaving textile machinery in the belief that such machinery would diminish employment. One who opposes technical or technological change." THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE, FOURTH EDITION.

favors some students who manage to claim seats near the front of the class to see the chalkboard better than their counterparts in the back of the room.

2. But What About New Material Raised in Class?

Display technology may be great for replacing the chalkboard when presenting *prepared* material, but professors also use the chalkboard to react to *new* material raised in class, which requires flexibility and spontaneity so that the professor can go beyond the presentation of prepared materials. Although one might readily concede the legibility or clarity argument for concepts the professor *knows before class* that he or she wants to have the class consider, a legitimate question arises as to what to do about new material that a student raises, or a professor thinks about, during class. Thus, spontaneity in the classroom presents a special challenge for display technology.

First, because the flexibility and spontaneity arguments do not address material that the professor has prepared and can anticipate will be covered in class, these arguments apparently concede that the computer should be used at least for all of the *anticipated* matter to be covered in class.[134] This is an important concession because if a professor is adequately prepared for class the professor should know, the vast majority of what will be covered in class, unless the professor enters class with no plan or agenda and merely opens up the floor for discussion of whatever is on the students' minds.[135] Thus, flexibility and

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[134] So to the extent a professor can anticipate material, hypotheticals, questions, explanations, etc., in his or her preparation for class, display technology should be used instead of the chalkboard based on the increased clarity and legibility rationale alone.

[135] *See* American Association of Law Schools, *Statement of Good Practices By Law Professors in the Discharge of Their Ethical and Professional Responsibilities*, 1998 AALS Handbook 90 (1998) (urging professors to "prepare conscientiously for class"). *See also Ex Parte McLeod* 2001 WL 700576 , at 1 (Ala. June 22,

spontaneity are needed with respect to perhaps only a small minority of class issues that are

unanticipated by an adequately prepared professor, but still worthy of class exploration.

Second, even when unanticipated but noteworthy information arises

during class, the computer can be used to transcribe and display it in class just as easily as

writing such material on the chalkboard, depending upon how quickly and comfortably a

professor can type. For non-textual diagrams, the computer has an electronic pen, operated by

the mouse,[136] which allows a professor to highlight or emphasize existing text or drawings as

well as create new drawings in class, again just like drawing on a chalkboard. That said, to the

extent a professor can still write or draw more quickly and/or comfortably on the chalkboard

than type or use an electronic mouse pen, the professor should write the unanticipated material

on the chalkboard. The chalkboard and the computer are not mutually exclusive means to

communicate with students in the classroom. Professors should use whatever is most effective

for them and their students. But the majority of what is done on a chalkboard can be done more

effectively with display technology. This maintains flexibility and spontaneity for those few

issues worth exploring that are not anticipated by even well-prepared professors and for

professors who remain more comfortable writing and drawing on the chalkboard freehand than

they are typing or using an electronic pen/mouse on the computer.[137]

2001) (holding that the term "duties require" in the Fair Dismissal Act requires a professor to reasonably prepare for class).

[136] The professor only needs to click on an icon and the mouse becomes an "electronic pen" allowing the professor to draw using the mouse. Also, if the class is equipped with a "Smart board" this process is even easier because lines can be drawn on the computer images with using a "stylus" -- a pen-like utensil – and different colors can be used for emphasis or identification coding (such as green arrows for plaintiffs claims, and red arrows for defendant's responses).

[137] Of course, the legibility and clarity issues raise their ugly heads once again whenever a professor uses handwritten text or drawings on the chalkboard instead of clear typewritten computer images. However, a

Still, as a general matter, a prepared professor already will have a good idea of most of the major points and issues that need to be covered or drawn out from students during class, and therefore can easily use display technology to prepare computer images in advance to address the grand majority of issues that will arise in class. It is similar to a prepared lawyer in court who will for the most part know the majority of what he or she needs to present in court before going to trial, and can and should prepare the key exhibits well in advance of trial, as well as responses to the objections, points of law, and arguments likely to be raised by opposing counsel.[138]

Lastly, legibly writing on the chalkboard takes valuable class time, especially if there is much information to write or draw. Before using display technology, I attempted to solve the timing problem by coming to class twenty minutes early to write out or draw all of my diagrams, text, and class outline. Having done so, I could simply refer to the material already written on the board during class so as to avoid taking class time to write/draw on the board. I also avoided feeling hurried in class so as to write text illegibly or draw sloppy diagrams because I did not have to take class time write legibly, not to mention taking class time

counter argument is that using a variety of visual sources makes the whole visual experience in class more interesting and less monotonous anyway.

[138]   It is true that trials always contain some new matter that the attorney does not anticipate, *see* Carla T. Main, *Seven Top New York Lawyers Share Their War Stories*, THE NEW YORK LAW JOURNAL, Sept. 4, 2001, at s8 (indicating than an experienced trial lawyer is used to courtroom surprises), but if a lawyer were to go to court without having much of a case prepared in the first place and simply planned to react spontaneously to whatever happens in court, we would consider such an attorney to be poorly prepared to the extent of bordering on malpractice and certainly lacking professionalism. *See Electro Scientific Indus., Inc. v. General Scanning, Inc.,* No C-96-4628 SBA (WDB), 1997 U.S. Dist. LEXIS 14266, at 23 (N.D. Cal. Sept. 18, 1997) (indicating that attorneys are motivated to prepare for trial because they want to avoid malpractice suits and take pride in their work). Although a classroom is obviously a much more free-flowing environment than a courtroom trial or hearing, expectations of preparedness should not differ so greatly between lawyers and law professors that the majority of what happens in a classroom cannot be reasonably anticipated such that a professor cannot or should not be expected to prepare adequately and professionally for class, as opposed to "just winging it."

to be careful to avoid misspellings or other transcription errors. After class, I erased my work

thinking I somehow would remember it all and could simply recreate my elaborate chalkboard

diagrams in later years. This drawing/copying/erasing process seemed overly laborious to keep

up for every class, for the rest of my teaching career.   Display technology allowed me to store

the drawing/diagrams, flow charts, hypothetical questions, key text from cases, rules or statutes

as computer documents that can be used again and edited and revised as necessary in ensuing

years.[139]   Before turning to display technology, however, I experimented with distributing flow

charts and handouts (listing elements, key text, hypothetical questions) before class, which

solved some problems, but unfortunately created others.

<div align="center">3.   <u>Handouts and Flow Charts to the Rescue . . . Temporarily</u>.</div>

Writing on the chalkboard before class worked reasonably well, but I

began to notice that students were coming to class early just to copy down everything that I was

writing on the board. One day, as almost the entire class and I were in the classroom about

fifteen minutes early and I was writing on the board (copying from my notes) and the students

were writing in their notebooks (copying from the board), I decided it would be better, or at least

more efficient if nothing else, to put all of the information I was copying onto the chalkboard

into a prepared handout for every class. I did not want to continue having to write it all out on

the board and then have the students copy everything from the board either before or during

class.

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[139] Professors can and should revise their lecture notes and classroom presentations in successive years anyway to stay current and fresh. But a professor who fails to do so will fail to do so regardless of whether they use display technology or not. Just as a professor may simply regurgitate from their faded yellow legal pad hand-written lecture notes, so can a professor merely regurgitate from computer-generated images. But in both cases, the teaching failure is an underlying pedagogical problem, not a display technology specific problem.

As a result, I began to store all of my notes and diagrams on computer, so that I would not lose them to the eraser after each class and would not have to recreate them from memory in later years. I then distributed them as handouts before each class. Thinking the problem solved, I soon began to overwhelm students with paper handouts of diagrams, flow charts, decision trees, list of analytical steps, list of hypothetical questions, etc.[140] But I began to notice that students were becoming less engaged in class, even with all of the helpful diagrams and flowcharts I had so eagerly prepared for them. I realized that although I may have solved chalkboard problems, I unwittingly had caused an even larger pedagogical problem in the classroom.

4.   Handouts: Fostering Student Passivity.

A student once told me that my handouts were "so helpful it was not even necessary to come to class."[141] Although at the time he meant to compliment the usefulness of the handouts, I failed to recognize the serious pedagogical implication of his observation until later. Eventually I realized I was making my role in class irrelevant. Perhaps this realization crystallized when I noticed a cartoon one day that at first made me chuckle, but then gave me pause. The cartoon is a drawing of an empty classroom where at the podium the professor has left a cassette tape player that is playing the professor's tape-recorded lecture, while all of the students likewise have left tape recorders at each of their seats in order to record their professor's tape-recorded lecture. The cartoon of course questions why the school is even

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[140]   Click here for a few examples of these handouts.

[141]   The student was Robert Bale, who is now a very successful plaintiff's attorney in Sacramento, California.

having a class at all when no live person is there to participate in it and the professor simply could have given the students copies of the tape-recorded lecture and skipped the empty ritual of having a class.

So my concern was that I was fostering passivity by simply "spoon-feeding" information to students that they were either copying from the chalkboard or already had prepared for them in a completed handout. I was so eager not to be the kind of "swim coach" that simply throws swimmers into the deep end and then expects them to learn how to swim on their own, that I had overcompensated by becoming the type of swim coach that was doing all of the swimming for the swimmers, as they just seemed to stand poolside and passively watch me do their work for them.

The problem with handouts and flow charts is that they are *complete* self-contained documents from the moment they are distributed; there is no layering or building of the constituent elements by drawing out answers using the Socratic method exploring all of the contours of the response and then confirming those answers in an interactive way. Much of the learning process is defeated if the answers, list of elements, methods of analysis, key facts and such are already set forth by the professor in a handout the students have before class. The problem was that students thought these professorial handouts were the ending point of class rather than the beginning catalysts for academic exploration, and it was entirely my fault for not pushing students beyond what was already contained in the handouts.

Display technology addresses this problem because no text or image is displayed to the class until the professor is ready to have the class consider it. Moreover,

students have to take notes instead of having the material reproduced for them.[142] Without

handouts students must become involved in class by considering the displayed images and text

and then reconstituting that information on their own. There is a value in having the students

ingest the material and then reformulate it in their own words.[143] For example, when relating a

procedural timeline while explaining pleadings or discovery, the professor can build each

element of the timeline during class and discuss each chronological step or layer as the class

proceeds. Most importantly, the professor can *focus* the class on the particular legal implications

and strategic maneuvers of each step systematically. This is where the professor must push the

students beyond the information displayed.

Of course, law professors should not allow their role in class to be

reduced to be that of a mere "information-giver" and the students' role to be reduced to nothing

more than "information-receivers." This is true regardless of whether the professor uses display

technology, handouts, the chalkboard, or nothing at all. Class should be an experience where

the student learns not only information, but more importantly, *how to analyze* that information,

and *how to apply that information* to new situations so that the legal skill of a lawyer is

developed and can be used by the student to understand and solve future legal problems in

future complex circumstances.

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[142]   It is possible to hand out hard copies of all of the images presented in class but I have found such
would create the very student passivity that I am attempting to eliminate in the first place. *See* Part III.B.5, *infra*

[143]   *See* Laurel Currie Oates, *Beyond Communication: Writing as a Means of Learning*, 6 LEGAL
WRITING 1, 9 (2000) (discussing the impact of writing on learning). "A central claim of behaviorism is that learning
occurs through practice. Thus, if writing is a way of practicing, then students who write should learn more than
those who do not write, and the more writing students do, the more they should learn, or at least remember. For
example, a student who takes notes on a particular text should remember more than a student who merely reads [it].
. ." (footnotes omitted). *Id.*

It obviously takes more than providing information to students to accomplish that goal; however, providing information clearly is a necessary foundational part of that pedagogical mission. The goal is to make clear-thinking professionals; but part of helping students to get there during law school is to present information they need in a clear, manageable lawyer-like way to serve as a catalyst to the ultimate goal. Using display technology is not the end goal, but it can serve as an effective tool in the learning foundation for law students and as a clear launching pad into the skills development of a future attorney.[144]

III.   An Additional Observation: Law as a "Foreign" or Second Language for Law Students

For the last five years during the summer months, I have taught in a special International Program at UC Davis Law School, King Hall entitled, "USA Law Orientation" where judges, attorneys and LL.M. and other law students from foreign countries take an intensive four-week course covering various subjects of American Law.[145] English is a second language for most of these foreign lawyers/students. One of the common observations by these students is how much they are able to understand and obtain from my lectures given the added use of the display technology. They state that they are able to overcome the English language barrier much better because the verbal information I present is re-enforced by computer images. This should not be surprising because reading text in a foreign language is easier than listening to a native speaker

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[144]   *See* Part III and Conclusion addressing the critiques of display technology as mere "electronic spoon-feeding" of students and how this critique misapprehends the ultimate pedagogical purposes of display technology. Display technology is merely a *tool* that can help a professor be more effective in the presentation of material to a class and should not be misunderstood as a *substitute* for good teaching or the important function of skills development in class.

[145]   For a complete description of the USA Law Orientation Program, *see* http://universityextension.ucdavis.edu/international/orientation.html (explaining that the program provides lawyers, judges, prosecutors and defenders, notaries, law professors, pre-LL.M. students and business professionals the opportunity to gain a better understanding of the theories and practices of the U.S. legal system.)

speaking the language.[146] Moreover, a verbal explanation in a foreign language may become clearer once a student simultaneously sees various conceptual diagrams set forth in a visual (non-verbal) manner, in addition to hearing a verbal explanation (because there are now two chances for the student to understand the foreign language message instead of just one).

There was a lesson here not only for my summer foreign students (for whom English is not their primary language), but also for most of my students who are English native-speakers. Although English is the first language of most of my students during the regular academic year, the language of Civil Procedure or of Evidence or of my other legal courses is not. True, I teach all of those courses in English, but students often have commented to me that legal courses, with their own unique rule structures, are "like a foreign language" to them as they are learning. The words of the legal subject are in English, but of course the technical legal English being used is like a foreign language. Law students, especially first year law students, are studying law that in many ways is like a foreign language to them. So to the extent display technology is helpful to non-native English speakers in learning the law, it is similarly helpful to neophyte law students who are unfamiliar with the "foreign" language of Civil Procedure, Evidence, or other courses. Thus, display technology can be instrumental in overcoming both the literal and the figurative "language barrier" in teaching law.

IV. Coming Full Circle: Why I Occasionally Still Use the Chalkboard and Handouts to Supplement My Use of Display Technology

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[146] *See* Maxine Eskenazi, *Using Automatic Speech Processing for Foreign Language Pronunciation Tutoring: Some Issues and a Prototype*, 2 LANGUAGE, LEARNING & TECHNOLOGY 62 (1999), available at http://polyglot.cal.msu.edu/llt/vol2num2/article3/ (finding that "Below a certain level, even if grammar and vocabulary are completely correct, effective communication *cannot* take place without correct pronunciation because poor phonetics and prosody can distract the listener and impede comprehension of the message.").

There still can be a place for the use of a chalkboard or handouts in class to supplement display technology. Handouts are useful if the professor wants to impart technical information when there is no pedagogical reason to build the information slowly or progressively. Handouts also save time if there is no pedagogical reason to address each element of the information imparted (or if it simply summarizes material already taught). Handouts and flowcharts also send the message that students should be creating their own such handouts or flowcharts to synthesize material already learned. In short, handouts and flowcharts are great reinforcement tools for students and professors.

Similarly, the chalkboard still can be useful not only to address unanticipated but noteworthy information, but also to emphasize a point or method of analysis during class or to compare with the computer image on the screen already. It can be especially useful because the diagram or list of elements can be left on the board and referred to during the *entire* class instead of just at a particular point in class (this is a limitation of display technology, unless certain images are repeated or left unchanged for a significant period of class time or a "split screen" effect is used). For example, in Evidence, when teaching various aspects of hearsay, I will draw a simple diagram on the board, leave it up for the entire class, but refer to it at various points during the class.[147] Trial attorneys, of course, will employ this technique during their opening statements or closing arguments so that the jury can view the exhibit throughout the entire

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[147] The diagram consists of a speaker/writer, who makes a statement to the witness, represented by an arrow to that witness who is now in court relating that statement to the jury, with an arrow to the jury to represent that the statement is being used to prove the truth of the matter asserted by the declarant. The diagram keeps witnesses separate from declarants and it helps to focus the discussion appropriately, be it on what a declarant says to a witness out of court, or what the witness is testifying in court to the jury. Rather than continuously referring back to a PowerPoint diagram at various points in class, I can simply walk to the board at any appropriate time during class and point to certain portions of the ever-present diagram as I am asking a question or making a point. *Click here for an example.*

opening statement or closing argument for emphasis, or if they can get away with it, leaving a particularly important or helpful exhibit up for the entire trial for reinforcement. The exhibit is ever-present so that the jury can look at it on its own and/or whenever the attorney needs to refer to it during trial.[148]   In the end, students appreciate the effort that goes into preparing the material through display technology in addition, of course, to meaningful and helpful verbal interaction. More importantly, demonstrating hard work, careful preparation, and clear communication, in addition to the all-important verbal questioning and explanations, is a good academic example for law professors to provide for their law students.

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[148]   National Institute for Trial Advocacy, TANGIBLE EVIDENCE: HOW TO USE EXHIBITS AT DEPOSITION AND TRIAL § 10.3 (1998) (explaining how to use visual aids during closing arguments) "You can also use new presentation aids, made specially for closing argument, that outline or illustrate the points you are making orally. Even in areas where no exhibits were used with the testimony at trial, it may increase the effectiveness of the closing to use a list of points, a diagram of relationships, or some other graphic display to help hammer home the logic of the argument." *See also* John T. Asselin and David C. Pope, TRIAL HANDBOOK FOR CONNECTICUT LAWYERS § 455 (2001) (explaining that charts and diagrams may be used during closing arguments to elucidate points based on the evidence).

PART THREE:

CRITICISMS OF AND CONCERNS WITH THE USE

OF DISPLAY TECHNOLOGY IN THE CLASSROOM

To err is human. To really screw up, you need a computer.[149]

A.　　　We Have Been Here Before: Surviving the Alleged "Technology Takeover" Threat.

Before addressing the general critique that display technology will take over the classroom such that legal education will mechanically transform into a brave new world of teaching, void of humanity, but long on gadgetry,[150] it is worth examining how various technological changes over the years did not bring the teaching and pedagogy revolutions in the classroom that were much feared at the time. Instead, teachers have simply incorporated various technology tools into their teaching. Thus, teaching with technology historically has not meant that technology has dominated, as the medium became the message. Of course, the medium can become the message if the professor does not use a new technological teaching tool appropriately, and becomes so fascinated with the technology that the professor loses his or her

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149　　This is a play on an old saying, *cited in* Dan Vergano, "*Computers: Scientific Friend or Foe?,*" USA TODAY, 6D (August 31, 2004) (reporting that computers can cause unforeseen research problems in science).

150　　*See* David M. Becker, "*Some Concerns about the Future of Legal Education*," 51 J. LEGAL EDUC. 469 (2002) (critiquing the "technology takeover" threat in legal education) *supra* note 124. I am in my eleventh year of teaching law, so I certainly do not have the same breadth of teaching experience as Professor Becker from which to speak, but I imagine that when I am in my 41st year of teaching, and perhaps by then younger professors will be using virtual reality computer simulations to conduct classroom exchanges or experiments, I too might long for the "good ol' days" of simple PowerPoint display presentations in the classroom, when it was more "humane" (from my perspective) and there was less emphasis on technological experiences, and perhaps more on verbal and simple visual exposition of legal doctrine. My point here is that at least some of this technology takeover concern and basic fear of change and new methodologies might be more generational than substantive. *See also* Robert H. Thames, "*Hey, Did You Get My E-Mail? Reflections of a Retro-Grouch in the Computer Age of Legal Education*" 44 J. of L. Ed. (1994) (criticizing the loss of the human element in teaching due to the growing over-usage of computers).

true pedagogical purpose and focus in class. The good news is that display technology can help a professor to achieve certain teaching objectives inside or even outside of class, if used appropriately. Indeed, enhancing the ability to accomplish a particular objective is the essence of any good technological advancement.

Moreover, we need not fear new technology. For instance, take a simple example of a technological advancement outside of the educational context – say, the automobile, as an innovation in locomotion. Travelers can now travel farther and faster by automobile than they can by bicycle. However, it is of course true that there are new dangers posed by automobile travel that are not present, or as pronounced, as they are with a bicycle.[151]

So riding a bicycle has not been completely replaced by automobile travel, but the invention of the automobile certainly has enhanced locomotion and provides a great new option for the traveler – a tool to help accomplish the traveling objective – despite new and different associated risks. The point of this example is to analogize it to the educational context: display technology may also have some new associated risks and disadvantages, but if used properly, the teaching and learning pedagogical advantages of display technology often outweigh any such disadvantages and new potential problems.

Technological inventions in classroom teaching do not fundamentally change education at its core (we are still figuratively trying to get students to "travel" intellectually from Point A

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[151]   For example, one now might get into an automobile accident, especially if the automobile is not used properly, and such an accident often would be more injurious and serious as compared to someone who merely falls off of a bike. But this automobile accident concern obviously has not been enough to make us as a society eschew the automobile altogether and instead elect to travel predominately by bicycle given the new downside risk. We wisely have decided that getting from Point A to Point B is often easier, faster and better accomplished by automobile rather than by bicycle, despite the increased risk of a much more serious

to Point B), but such classroom technological advancements have had positive effects in the past and they have provided professors with effective options in the classroom, without "taking over" the way at the time many feared that they would. The typical scenario of a technological advancement helping to accomplish a basic goal (such as the automobile as a technological advancement in locomotion, or even one not so pronounced) need not be any different now with the use of display technology in the classroom.[152]

      1.   <u>Classroom Technology Takeover: "Famous Last Words"</u>[153]

Technology[154] in the classroom has been incorporated in teaching throughout the ages in various ways. Cave drawings served as the first predecessors of educational

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accident/mishap. Moreover, bicycling still provides certain utility, such as exercise, enjoyment, and even punctuality (if there is a traffic jam) over driving in certain contexts.

152   This is not to suggest that law professors who do not use display technology are necessarily mere slower-traveling, deficient "bicycle riders" as professors, while those who use display technology are necessarily better, faster-traveling "automobile drivers." Drivers, after all, may not know where they are going and may cause all kinds of havoc on the road while a biker may not suffer from any such problem, because the biker knows exactly where he or she is going and can get there quite effectively and has been doing so for years. The overall thesis of this article is that display technology is just a tool that can be helpful, if used appropriately, but of course a tool, especially a good tool in the hands of a fool, or a bad teacher for our purposes, is ineffectual at best, and harmful at worst. *See* Part III and Conclusion.

153   Not only are there often apocalyptic predictions that somehow do not come true, as I will argue with respect to the apparent fear that there will be a "technology takeover" in teaching, but there are also wonderful understatements that likewise prove to be "famous last words" with respect to computer technology, as history inexorably proves them wrong. For example, note the following predictions from supposed experts: "I think there is a world market for maybe five computers." -- Thomas Watson, chainman of IBM, 1943; ". . . I can assure you that data processing is a fad that won't last out the year." -- The editor in charge of business books at Prentice Hall, 1957; "But what . . . is it good for?" -- Engineer at the Advanced Computing Systems Division of IBM, 1968, commenting on the microchip; "There is no reason why anyone would want a computer in his or her home." -- Ken Olson, president, chairman and founder of Digital Equipment, Corp., 1977; "640K ought to be enough for anybody." -- Bill Gates, 1981. All of these quotations are found in Michael Arkfeld, THE DIGITAL PRACTICE OF LAW (Law Partner Publishing, 2001) at 1-5.

154   "Traditionally, technology has been defined as the application of science to the improvement of the human condition. Pure science seeks knowledge for its own sake; technology seeks to apply science to practical human endeavors for the benefit of people." James E. Eisele & Mary Ellin Eisele, EDUCATIONAL TECHNOLOGY: A PLANNING AND RESOURCE GUIDE SUPPORTING CURRICULUM (1990) 3. *See also* Cuban, *infra* n.158, at 4,(noting that classroom technology is "any device available to teachers for use in instructing students in a more efficient and stimulating manner than the sole use of the teacher's voice.").

technology.[155] Even when human language had not fully developed, at our most basic human

level of understanding visual communication alone appears to be the most effective our earliest

ancestors communicated. Of course, the major evolution in education technology after language

and verbal communication developed was the use of written language to spread and preserve the

printed word.[156] But despite the obvious benefits of books and the written word, they met with

initial resistance by some ancient teachers.[157] Today we would not dream of written language

and books as somehow being antithetical to learning and basic educational values, but for a

while, especially in certain sectors, they were considered as such.

At the beginning of the 20th Century, classroom learning began to incorporate

other technological innovations, but those innovations did not overtake and replace traditional

teaching functions, despite apocalyptic warnings. For example, in 1913, referring to the

invention of film, Thomas Edison predicted "[b]ooks will soon be obsolete in the schools."[158]

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155   *See Id.* Eisle & Eisle (acknowledging that the genesis of technology in education is cave drawings).

156   *Id.* at 14 (recognizing that the "invention of the Gutenberg printing press, with the subsequent wide availability of books, altered the nature of education so dramatically, that its effect is still felt today").

157   *See supra* note 13 (citing Socrates' warning that written language would produce forgetfulness); *see also* Eric Ashby, 7 *Graduate Journal* 359, 360 (1967) (relating how "[i]n the reign of Asoka writing was widely used for administrative purposes but it was rejected for the transmission of sacred literature: passages from the sacred books had to be communicated by mouth and learnt by heart, not read"). This "revolution" . . . "was the adoption of the written word as the tool of education. Prior to that time, oral instruction prevailed and it was only with reluctance that the writing was permitted to co-exist with the spoken word in the classroom ."   "It is said that a press set up in Constantinople in the eighteenth century generated such fierce opposition from the Muslims that it had to be abandoned, and 'no book was printed in Muslim lands until the year 1825, when a press was set up in Cairo.' Id. 359, 361.

158   Larry Cuban, TEACHERS AND MACHINES: THE USE OF CLASSROOM TECHNOLOGY SINCE 1920 11 (1986).

But cost, access, unreliable projectors, and hardware problems limited film use in education.[159]

Even after these basic hardware and facilities problems were solved, films still have not replaced the teacher, because a teacher is live in the classroom and therefore can engage in real time with students by reacting to a student's comments or questions. Good teachers may have realized the potential of using films in class, in certain situations, but films did not "take over" the way in which it was once feared that they would. Fortunately, most teachers are not so lazy that they allow their vital teaching role to be replaced with a book or an instructional film.

Similarly, radio did not replace the teacher, even though a nationally renowned professor could conceivably broadcast to thousands of students across the country and therefore replace many local professors in classrooms. In 1932, Benjamin Darrow stated confidently about radio in the classroom that: "[t]he central and dominant aim of education by radio is to bring the world to the classroom, to make universally available the services of the finest teachers, the inspiration of the greatest leaders...and unfolding world events, which through the radio may come as a vibrant and challenging textbook of the air." But radio would have a similar fate to film, with many of the arguments favoring its use, interestingly, resembling the arguments today surrounding the use of the Internet and distance learning.[160] In the end, radio

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159   *Id.* at 12, 18 (citing various reasons as to why film did not replace teachers or significantly reduce their classroom role, such as teachers' lack of skills in using equipment and film, cost of films, equipment, & upkeep, inaccessibility of equipment when it is needed, and finding and fitting the right film to the class.)

160   *See generally* Robin Peek, *A Distance Learning Reality Check*, INFORMATION TODAY, Feb. 2000, at 30 (suggesting that "distance learning still has many hurdles to overcome if it does indeed become a common form of educational delivery"). The whole distance learning debate is beyond the scope of this article. In short there are advantages to distance learning. Advantages include: time and convenience for students, better and more reliable technology making interaction seamless, and access to professors that would otherwise be impossible; but there are disadvantages too, such as a lack of direct contact where there really is no chance to interact live and in person with professors and other students rather than just on-line or even through video conferencing. However, regardless of

did not replace the teacher in the classroom or take over classroom education, reducing the classroom professor to a mere technician simply turning on and off the radio transmission broadcast by a remote speaker for the students.

Next, enter instructional television in the classroom and the great expectation of change given the significant investment of money.[161] Although some predicted that television would "take over" as well, "[i]nstructional television occupies a tiny niche of the school day for the teachers who use it . . .[and] has been and continues to be used as an accessory to rather than the primary vehicle for basic instruction."[162] Again, the professor's critical role in the classroom survived the perceived threat from the new technology.

These examples of various technologies never really replacing the teacher or fundamentally changing pedagogy, serve to underscore the undeniable fact that teaching consists of much more than merely presenting information for student consumption. Teaching certainly includes that, but teaching involves at its core the intellectual interaction between student and professor and the joint academic exploration of material by students with other students that together make education vibrant and valuable, all of which is far beyond the simple act of technologically-enhanced information transfer and receipt.

2.   History Probably Will Repeat Itself

how one may feel about the issue, for purposes of this article, display technology would be helpful for all of the reasons stated herein, in either a live classroom teaching context, or in a distance learning, on-line context.

161   *See* n. 155, *supra* at 28 . In 1953, the FCC allocated 242 channels for educational purposes and various entities invested a significant amount of money such as the Ford Foundation's Fund for the Advancement of Education initial investment. In 1962, Congress underwrote the initial use in schools and colleges by providing $32 million to develop classroom TV and by 1971, over $100 million had been spent by public and private sources.

162   *Id*. at 49 (1986) (stating that, "[o]nly a small band of teachers use the medium willingly, consistently, and with enthusiasm;" and "[t]eacher use of television, while slight overall, is substantially greater in elementary than in secondary schools.")

These technological advancements, coupled with their limited use in the classroom, demonstrate that the prediction of a technological takeover every time a new technology is introduced is often exaggerated. The teacher has maintained a prominent role in the classroom regardless of the advent of options to help communicate and facilitate learning through various technological mediums. So the dire predictions of the "scourge" of PowerPoint[163] and other obtrusive classroom technology will most likely fade.

Thus, law professors need not fear, for "Video Will *NOT* Kill the Radio Star" because law professors will remain relevant in the classroom regardless of their own or others' use of display technology. If a professor does use display technology, it will be up to that professor, not the technology, to make the professor's teaching sufficiently interactive for his or her students. Therefore, display technology is just the next evolutionary development in classroom technology that gives teachers another tool to communicate with their students. Notwithstanding display technology being no serious pedagogical threat to the fundamental essence of teaching, there are still some pedagogical concerns and criticisms regarding the correct or optimal usage of display technology in the classroom that are worth exploring.

B. The Five Rhetorical Questions Answered.

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163   The criticism of PowerPoint display technology is visceral, vehement, and just plain nasty. *See* Clifford Stoll, THE HIGH TECH HERETIC (devoting a whole chapter to "*The Plague of PowerPoint*."). Consider also just the titles of the following highly critical articles: "*Does PowerPoint Make Us Stupid*?" (AP Article) CNN.com Technology, Dec. 30, 2003; Julia Keller, *"Is PowerPoint the Devil?"* SiliconValley.com; Thomas Steward, *"Ban It Now! Friends Don't Let Friends Use PowerPoint"* Business 2.0 Feb. 2001; Edward Tufte, "*PowerPoint Is Evil*" Wired Magazine (stating ". . . [P]ower corrupts. PowerPoint corrupts absolutely."); Art Janke, "*Is PowerPoint Too Dumb for Words*?" Darwin. Mag.com (June 18, 2001); John Scwartz, "*The Level of Discourse Continues to Slide*," N.Y. Times, Sept. 2003. One can only wonder if these critics would assail teachers who use the chalkboard the same way they do those who use PowerPoint. Is the chalkboard also an "evil" "devil" that is a "plague" on learning and discourse that "makes us stupid" because it is "too dumb for words"? Poor Mrs. Garret, my fifth grade teacher at Beulah Heights Elementary School who was awesome when she used the chalkboard in class; she probably had no idea at the time the evil, devil, plague of a future law professor she was helping to create as one of my inspirational teaching role models.

1. Display Technology As An Oversimplification Of The Classroom Experience

Is the use of display technology nothing more than an oversimplification or "dumbing-down" of the classroom experience in order to connect with today's students who, with extensive experience in receiving visual stimuli (T.V., video games, the Internet), have suffered an unfortunate decrease in their attention spans and in their ability to think critically?

This "dumbing-down" charge is a valid criticism if the professor uses display technology as nothing more than an in-class teleprompter in order to reduce the profundity of legal problems to a boring reading of simplified text and bullet points. To reduce the classroom experience to listing gross generalizations of legal doctrines and simple checklists of information that professors read aloud while students follow along or read to themselves makes a mockery of class and the rich teaching traditions of legal training. If a professor poses a question, but instead of allowing a student to grapple with it, merely states the answer and then moves on to the next factoid, students are neither challenged intellectually nor is there any real, meaningful development of legal analytical skills in class.

a. But Don't Shoot the Messenger.

This "dumbing-down" criticism is really a direct function of bad pedagogy in the first place. Bad pedagogy can be accomplished by using any number of information delivery techniques, technology or no technology. Whether a professor reads from handwritten lecture notes, or from fancy display technology images, or uses nothing at all and simply recites from rote memory, the lack of intellectual challenge for students and the lack of analytical skills development is the same. Thus, the use of display technology is not responsible for "dumbing-down" a class; instead, the blame for such a problem really should rest solely with

the professor. Nothing *intrinsic* about display technology dumbs down a class anymore than the act of reading from a casebook or reciting doctrine from memory necessarily dumbs down a class. Indeed, a chalkboard does not necessarily dumb down a class either, even though a professor may use a chalkboard to do so. Thus, it all depends upon *how* such information transfer techniques are used in class by the one who has the ultimate teaching responsibility -- the professor.

The use of display technology probably receives this "dumbing-down" criticism because if a professor is engaging in oversimplification in the first place, display technology makes that professor's pedagogical failure very apparent. Indeed, because display technology is so effective at what it does – clear delivery of the professor's message – that when that message is a simplistic, dumbing-down of information given to students in a passive, non-interactive way, critics often will "shoot the messenger" (the display technology) when it is actually the message, and in reality, the professor as the author of that message, that is to blame. As a result, display technology should not be held responsible in a "guilt by association" manner just because it is a very effective messenger of what at times may be an overly simplistic message from a boring, non-interactive teacher.

Consequently, there is a failure by the critics here to aim their critique correctly as they are being over-inclusive when they blame the tool, instead of the person using the tool. When they see bad teaching being executed with display technology, they incorrectly reason that it *must be* solely the fault of the display technology and not that of the professor. Returning to the microphone example, when a professor uses a microphone in a large class so that students can hear better, but then proceeds pedagogically to oversimplify the presented

material, it is nefarious to argue that the oversimplification by the professor is necessarily the fault of the microphone, instead of the professor's poor teaching. Of course, the microphone is responsible only for making it easier to hear the professor's words, but the oversimplification of the academic material is solely the fault of the professor.

In this example, it is easy to see how the oversimplification in class has everything to do with the professor's bad teaching and nothing to do with the use of the microphone. However, when it comes to display technology, the critics are thrown off track, even though the principle at work here should be the same: don't blame the technology for merely amplifying the professor's message. When the technological medium that amplifies the professor's words is visual (display technology showing text and images created by the professor) it receives the oversimplification critique, but when it is audible (a microphone amplifying words chosen by the professor) everyone seems to understand that it would be rather silly to critique the mere use of a microphone as being the cause of the professor's oversimplification. So not only does display technology amplify what the professor is saying (similar to a microphone), but it amplifies it visually beyond a microphone by adding to it or supplementing it simultaneously through a different sensory medium (sight).

b.   Too Much of a Good Thing?

One pedagogical goal of a professor should be to explain, clarify and simplify the complex in order to make the complex accessible to the student.[164] But there is a risk of "overkill" here. If ALL a professor does in class is simplify the complex and make legal intricacies more accessible in a passive, non-interactive way, then display technology, being the

great communication tool that it is, will help a professor achieve that pedestrian goal. Just like a knife is a great tool to help prepare food, its properties also allow it to be used improperly, such as a weapon that can be used to commit a violent crime; so perhaps neither children, nor law professors, should play with sharp things until they learn how to use them properly. Unfortunately, a professor who already may have a tendency to oversimplify and dumb-down their classes, might be drawn to display technology as a tool that can help achieve that limited objective in class, but do so in a very graphic and vivid way.

If a professor is "lazy" in his or her pedagogy, he or she might decide to hide behind display technology thinking that it will "liven up" an otherwise boring class presentation. There may be that initial allure, and whiz bang graphics might make an initial splash as something new and different, but a discerning audience of law students will very soon figure out that ploy. Modern law students already are familiar with display technology, and that is why they will not be overly impressed or "bamboozled" by classroom technology. If a professor is dumbing down a class and using display technology in the process, law students will realize that display technology is not the cause, but neither is it going to cure that particular professor's teaching deficiencies. In fact, the display technology probably will just make it even more apparent for all to see just how bad the professor is as a teacher.

c.   <u>There is a Time to Simplify, and a Time Not To Simplify</u>

Although display technology and simplification are NOT synonymous, display technology can be used to list analytical steps or elements of a cause of action or to categorize logical connections between analytical steps and relevant facts of a case or

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164   *See* Arthur W. Chickering and Zelda F. Gamson, *Seven Principles For Good Practice In Undergraduate*

hypothetical, or to show a diagram that helps separate important analytical steps in a

complicated analysis.[165] But once that is done and the foundations for learning are laid out, the

actual legal analysis must begin. A professor must draw out students pushing them to be precise

in their analysis. Students need to focus on the particular element of a cause of action they are

attempting to explain and what logical connections they are attempting to make. Technology

can help a professor do this, but the true essence of teaching must come from the professor.

Also, display technology should be used not only to relay text/words but

also to visually conceptualize legal problems and issues through non-verbal pictures and

diagrams. Such non-verbal images go far beyond merely text listed in bullet points, which can

be good, but remains somewhat limited because everything is still being conveyed through

linear word/verbal concepts. Legal concepts should be conveyed through verbalization as well

as non-verbal, visual means, such as diagrams, drawings and even photos. Visual technology is

helpful because sometimes-conceptual diagrams can be used (without written text) to convey a

difficult legal issue.

For example, students in my Evidence class may not grasp how a witness'

former convictions may be used as character evidence to impeach the witness' credibility. They

have a difficult time understanding the overlap between character and credibility that is the

foundation of Federal Rules of Evidence 608 and 609. Rather than just expressing the overlap

verbally or even textually in simple bullet point form, I also use a Venn diagram of two

overlapping circles (one circle representing character and the other representing credibility).[166]

This helps students to parse out the overlapping constituent elements of these concepts.

By using this diagram, I can refer to different section areas of the diagram and then ask students to construct examples of a pure character attack not involving credibility (such as attacking the witness' character as a violent person, which has nothing to do with that witness' credibility as a truth teller) or a pure credibility attack not involving character (such as attacking the witness' memory or perception, which has nothing to do with that witness' moral character to have a propensity to be a bad person). I can then point to the overlapping area of the diagram for a simultaneous attack on credibility and character (such as attacking the witness as a liar, a person with both (1) a propensity [the character element], (2) to lie [the credibility element]).

Finally, I can get to the difficult issue of why a witness' former felony conviction for say assault has anything to do with that witness' character for truthfulness (the assumption that law breakers do not respect the law and therefore will not respect the duty to tell the truth in court). [167] In this regard, the visual technology does not "oversimplify" these legal concepts and intricacies; instead, it clarifies concepts visually (and non-textually) so that students can understand them, and focus on applying these constituent elements in a logical, organized and more meaningful way.

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166   Click here for example of diagram

167   28 U.S.C.A. F.R.E 609, Adv. Comm. N. 1972 Proposed Rules (West 2004) (The weight of traditional authority has been to allow use of felonies generally, without regard to the nature of the particular offense, and of *crimen falsi* without regard to the grade of the offense. This is the view accepted by Congress in the 1970 amendment of § 14-305 of the District of Columbia Code).

While such pictorial diagrams can simplify the complex, the reason to do this in class is to make the complex legal concepts more analytically accessible to students. This is not to gloss over the inherent academic complexity, because that would be an instance of facile oversimplification. Rather, it is to make the legally complex more readily accessible to students so that they can ingest and then apply the concepts (which is the kind of simplification that goes to the heart of teaching). If critics believe that assisting students to access complex information is not a worthwhile pedagogical goal, then they are naturally going to believe that any simplification necessarily qualifies as undesirable "over-simplification." Simplifying concepts to promote understanding is not necessarily a bad thing. While it may stroke our egos if a student says, "that professor is so smart I cannot even understand her," that should not make us feel all that great about whether we are successfully teaching and connecting intellectually with such a student.

> d.   <u>Reversing the Critique to Make the Point: Why Verbal-Only Exposition is Not Necessarily "Overly-Complicated."</u>

Critics of visual technology who charge that use of display technology promotes the oversimplification of material would probably reject the same over-inclusive logic if it were reversed and applied to verbal-only communication. If a critic from the pro-technology side stated that all professors who do not use display technology in class are necessarily "over-complicating" all of their subjects, the anti-display technology critics probably would legitimately reject the argument and defend by saying that it really depends upon HOW the professor teaches. Is the professor clear and cogent with his or her articulations in class or is the professor confusing, rambling and unintelligible in his or her verbalization? Those critics

would now defend verbal speech/discussion by saying that it is not the use of words in and of itselfas a form of communication that is the cause of any confusion; instead, it solely would be the professor's inappropriate use of words that would be at fault.

Further, they would go on to state that one cannot over-generalize and say that a professor is necessarily being overly complex by using words alone instead of using both words and display technology. Some professors are articulate, while others are not, so it just depends upon their ability as professors to communicate effectively with words, not on any inherent failing of words as a communication medium that necessarily make a professor using words only "overly complex." Fair enough, but if these are legitimate defenses of spoken language only as a legitimate form of classroom communication, then the spirit of those defenses should likewise apply to the use of display technology as a legitimate form of classroom communication. Accordingly, it is just as wrong to argue that a professor is *necessarily* oversimplifying by using display technology, as it is to say a professor is *necessarily* overly complex for using words alone.

e. Focusing on the Real Problem.

Display technology simply amplifies whatever the professor is doing pedagogically in class, good or bad. Critics focus solely on how an already bad professor may be made worse by using display technology, while cheerleaders for display technology focus solely on how a good professor may be made even better by using display technology. Admittedly I am focusing on the latter, because I encourage good professors to be better. But even the cheerleader in me will caution that if a professor is a sub-par professor, that professor first needs to focus on improving basic pedagogy. Until that issue is satisfactorily addressed,

display technology will not help that professor and will probably serve only to make any existing teaching problems worse for students.

2.   Display Technology As Stifling Intellectual Spontaneity By Shutting Down Unpredictable Academic Tangents During Class

Does display technology stifle intellectual spontaneity by shutting down a student's, and even the professor's, desire to explore a certain unpredictable academic tangent during class?

This is a valid criticism if professors become so enraptured with display technology that they become inflexible in class, and will only "stick to the script" in order to cover all of the prepared material in the presentation. If that is the case, class becomes boring, as there will be little student participation and no intellectual growth through academic exploration. It is like having to listen to a speech that is simply read to the audience from a prepared text versus listening to a speech given by someone who is speaking to the audience from the heart in a natural conversational tone, asks questions, and perhaps even allows questions from the audience. Students do not want to be read to in class, as they can read faster to themselves. So if a professor uses display technology as an inflexible teleprompter and nothing else, then the professor loses all spontaneity and fails to pick up on how the class may be understanding, or not understanding, the material. So learning opportunities to explore student-initiated tangents and engage and interact with the professor intellectually are lost if the professor slavishly follows an inflexible agenda.

Again, this criticism can just as easily be made about professors who do not use display technology but simply follow their own rigid class coverage schedule and refuse

to deviate from what they already have prepared. However, a professor with his or her own firm

class agenda who refuses to explore tangents and never deviates from the script is not a new

problem. Although display technology can be used that way, we have the same

causation/correlation issue: such a professor may misuse display technology but the actual cause

of the inflexibility and the overall root problem is the professor, not the technology.[168] I

suppose display technology can be used as nothing more than a simultaneous sharing of the

professor's class notes with the entire class as the professor considers the issues contained

therein, but that does not solve the inflexibility problem. Whether the notes are displayed with

technology or read from the professor's handwritten notes makes little difference.

<div style="text-align:center">a.   <u>Resisting the Temptation to Remain Wedded to the Prepared Message.</u></div>

A professor spending a lot of time preparing display images may cause

the professor to become much more invested in presenting the prepared material, and presenting

it in the same order in which it was prepared. But this investment in the material should not

control the professor's exploration of the subject matter. So professors need to have the

flexibility to change their script. But this is true regardless of whether one uses display

technology, because a professor not using display technology may be too wedded to their

handwritten notes in the same way a professor may be too wedded to their display technology

images. Again, this is more of pedagogy, than a display technology, issue.

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168   This causation/correlation problem can be illustrated with an observation about the conference affiliation of the winning team in the "Super bowl" in professional football as compared with yearly positive or negative movements in the stock market right after the game. There is an interesting correlation, for the last eight years, in years when the American Conference ("AFC") team wins the Superbowl, the stock market goes down, but when the National Conference ("NFC") team wins, the stock market goes up. **[cite]** Despite this correlation in events, it would be silly to argue there is an actual causal nexus between the two events, a real cause and effect such that the winning team's arbitrary conference affiliation has anything to do with the actual reasons for positive or negative movements of the stock market.

However, display technology still might make classroom spontaneity a bit more of a challenge for a professor. Using display technology requires the professor to put in a lot of time and effort in preparing the visual diagrams and text and thinking about the precise order in which the class should consider the relevant material. Naturally, the professor using display technology might find it more difficult to deviate from his or her preparations because the professor may be more invested in her presentation and the order in which she has developed the material.[169]

Strategic decisions must be made with the best interests of the class in mind. When these interests conflict (going off on an interesting tangent vs. staying focused), the professor needs to make a judgment call. But this is nothing new in teaching as it is true whether one is talking about reliance on a class outline, lecture notes or prepared display technology images. Still, a professor may subconsciously be more reluctant to deviate from an elaborately prepared set of display technology images than to deviate from handwritten or typed notes of a class outline. A professor may have a harder time changing the order of issues is be discussed with display technology than with class notes because the computer images must be rearranged on the spot for all to see while a professor can more easily move around to different parts of their written outline/class notes inconspicuously.

Thus, although all professors need to be careful in this regard, professors using display technology need to be extra careful to resist the temptation to remain wedded to

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[169] An analogy from practice is again helpful here: just as a lawyer taking a deposition must make a strategic decision between (1) exploring a tangent raised by the deponent during a deposition, and (2) keeping the deposition focused in a logical and orderly fashion so that the tangent is addressed at the most appropriate time, if at all, so too must a professor make such a strategic decision in class on whether (1) to explore a particular interesting tangent or (2) to keep the class focused and on task. Just like attorneys must listen to the answers given in a deposition and respond accordingly, instead of being inflexibly stuck to their next prepared question as though the

their prepared material. They need to feel free and confident enough to skip prepared material or to change the order of presentation if that makes logical sense, given the course of class discussion, or even to stop with the prepared material entirely for a significant amount of time in order to address other issues or questions that may come up that warrant class time be spent on them. Much of the judgment and skill necessary to make good teaching decisions about class direction comes with experience. More experienced professors are able to deviate from their scripts for important strategic reasons and they have developed the confidence in their judgment necessary to make such a strategic decision.

A professor should consider display technology as simply a method for laying out a series of beginning catalysts to academic exploration, and not as the ending points of class in and of themselves, unless the professor is summarizing at the end of the academic exploration. For example, at the end of a section, a professor can say: "So we have learned from the cases that the five elements of a prima facia tort case are . . ." and then use display technology to set forth the following: "(1) Duty (2) Breach of that Duty/Standard of Care (3) Causation (4) Damages and (5) Plaintiff's Conduct," or if the professor is briefing students at the beginning of class on what main issues were covered in the last class, such as "Last time, we considered the requirements for lay opinion testimony, which were (1) rationally based on the witness' perception and (2) whether it would actually be 'helpful to the jury'. . ." From there, the elements can be explained further, expanded or posed to students as a hypothetical by using display technology. But foundational material is not going to change during class, regardless of what happens during class because the text of the rules, statutes, provisions or, case, does not

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answer to the last question does not matter, a law professor also must listen to student answers, questions and comments and respond to and explore them appropriately.

change (at least for that class). Just because a professor is prepared and can direct a class and keep it focused does not mean the professor is being "inflexible" or so tied to his or her notes/display images that he or she necessarily lacks the ability to deviate when necessary. Still, professors using display technology should be cognizant of this possible inflexibility downside and be extra careful to avoid it.

      b.   <u>Display Technology as a "Crutch" – But "Don't Throw the Baby Out With the Bath Water."</u>

Some professors, especially new professors, might be nervous about conducting a law class concerned that they may come to a point where they do not have anything insightful to say to the students.[170] Display technology might seem a helpful remedy because if the professor gets stuck or lost, he or she at least will have something to say as the professor can always just read or comment on the slide show. Unfortunately, this is not a good way to use display technology. If display technology is reduced to a mere crutch for the professor who is unsure or even forgets how to conduct class or uses display technology to rebuff tough questions because they have the excuse that the class needs to get through the material, then display technology is being used inappropriately.

In fact, using anything in class if it is merely an inflexible "crutch" (be it display technology, notes, the chalkboard, reading textual passages from the casebook, or just showing video clips), is a function of poor teaching. Although display technology can be used a crutch that does not mean it is necessarily a crutch. Asking students endless questions about the facts of a case may also be used as a crutch if the professor has mastered the factual details of

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[170]   The "New Teacher Connection" is full of several and journal entries describing the frustrations, nervousness, and problems that new teachers face. *See* **http://www.pdkintl.org/ntc/ntchome.htm**

the case but does not know how to teach the application of the legal principles to other situations very well. Such a possibility does not mean the Socratic method an ineffective teaching method, only that it is being used inappropriately. Professors need to make sure they are using display technology in the appropriate manner and not as a crutch.

       c.   <u>Resisting the Temptation to Go Off on a Tangent and Lose Focus, Organization, Control and Coverage.</u>

Although professors need to make sure they remain spontaneous and flexible in class, spontaneity has its dark side as well. Some professors can become so enraptured with the moment and the excitement of legal argumentation and with the vast ocean of interesting legal and theoretical issues swirling around in a case or problem, that class degenerates into a hodge-podge, free-for-all of random legal issues, complexities, paradoxes, and intricacies that the student is supposed to follow, organize and somehow make sense of it all. Students should have practice in making sense out all of the wonderful and interesting tangents that are raised in class. In fact, that is one of the frustrating but exhilarating experiences students must have during law school. But the professor needs to exercise at least some control, direction and organization, or the class becomes a disjointed orgy of ideas.

Display technology has the advantage of forcing such professors to focus on what they hope to accomplish for each particular class. It requires professor to take more responsibility for what is going on in class because the professor has to produce something tangible each class session for the students to see. For the professor who goes into class thinking "Well I think I will just be brilliant for the next hour and hope some of it rubs off on the

students," such is not only arrogant but is irresponsible.[171] Display technology may help this problem, but the correct diagnosis of root pedagogical problems needs to be made in the first instance. For professors who are scattered, using display technology can help them to focus, but for professors who lack spontaneity and flexibility in class, display technology may only exacerbate their rigidity problem. Professors interested in using display technology should do a thorough self-assessment to see where they are on this continuum in order to be aware of how to best adopt display technology to their own teaching.

> d. <u>Intellectual Spontaneity and Exploration of Legal Issues: Believe It or Not, Sometimes There Is a Right Answer</u>

Display technology validates students who provide correct answers to certain hypothetical questions. Of course, some legal complexities do not have clear answers as we professors often use class time to explore the gaps, conflicts and ambiguities in legal rules or doctrine; but sometimes legal questions do have definitive answers. If a professor diagrams the facts of a case as part of her preparation, and then a student correctly states the case in accordance with those images, it reinforces graphically that student's positive performance in class. This re-enforcement validates the student while also keeping the rest of the class informed as to what is most important factually about the case. It also cues the rest of class to the portions of the student's comments that are lacking, inconsequential or just plain wrong.

But it also means that if the professor is wrong about a certain aspect of the case, or has forgotten an important point, or has overemphasized a point that should not have been, then the professor is now "on the record" in front of the whole class, and such an experience can be embarrassing. But this should not be a reason for professors to be afraid of

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[171] *See supra*, notes 158-162 and accompanying text.

using display technology. If we professors expect this vulnerability of our students as we ask them tough questions, then we should be willing to put ourselves out on the line as well. We are the professors after all, and as such we should not shy away from *mutual* high expectations; in short, we should be willing to "practice what we preach." That is scary, but it is also intellectually honest and academically challenging for both students and professors.

3.   Class as a Mere Showcase for Technology Instead of Learning

Does class become a showcase for technology instead of a real learning experience when a professor uses display technology? It can. This is a valid criticism if a professor becomes so taken with the technological bells and whistles that the intellectual exchange gets lost in all of the unnecessary "whiz bang" graphics. Display technology can become so distracting that class is reduced to an endurance contest of images, sound effects and bullet points, instead of an intellectual experience where incisive ideas are exchanged and sharp legal analysis is honed.

a.   Just Because You Can Is Not a Good Reason.

The antidote to this problem is really quite simple: there needs to be a pedagogical, not a technological, reason for using display technology. If not, then computer images should not be used as a showcase for what can be done technologically. Other non-technology analogies are helpful here. In-class humor can be an effective teaching methodology, but *gratuitous* jokes that serve no pedagogical purpose other than to entertain or to make the professor feel better if he or she is a frustrated comedian, end up really being a waste of the student's valuable in-class learning time. Similarly, telling *unrelated* "war stories" from the practice of law has no pedagogical purpose other than to let students know that the

professor once actually practiced law (of course, a relevant "war story" to make a strategic or

practical point can be helpful). Likewise, asking a series of *irrelevant* questions about certain

picayune factual specifics of a case serves no pedagogical purpose other than to impress

students with what a good memory the professor has as the professor appears to know case

specifics much better than the students do (big deal, the professor probably has been teaching

the same cases for years while the students probably have read the cases for the first time just

the night before class). Examples such as these are legion demonstrating that bad teaching

judgment is the culprit, not in-class humor, "war stories" or asking detailed questions as

inherently and necessarily bad teaching methods.

Professors using display technology should avoid falling victim to this kind of

pedagogical mistake. With every sound effect, and with every displayed textual passage or

conceptual diagram, the professor should ask: "Is this display necessary in helping to get the

point across"? The standard for admission should be whether the image used is pedagogically

worthwhile – does the learning-retention upside outweigh the distraction waste-of-time

downside? To help in this balancing test, the professor should ask, what difference would it

make if I did not use the visual image/textual passage in class? If the answer to any of these

questions is "none," then the professor should not use the visual image in class. It would be, by

definition, a waste or time, and represent a significant pedagogical opportunity cost.

This balancing test determination is akin to the advice/feedback often

given to students who turn in written projects for class. For example, in my classes I will ask

students to make sure that as they write, they be satisfied that each paragraph they use has a

definite purpose and helps their overall analysis move along. The same is true for every

sentence, every phrase, and even every word. If any paragraph, sentence, or word fails to serve

the overall objective of the writing assignment, then it is a waste of time, a distraction to the

reader, and should not be used.[172]

The same kind of balancing test is necessary for a professor using display

technology. Display technology can either be used as an effective communication delivery

system of substantive ideas, or as a mere showcase for technology where the medium becomes

the message, and the substance of the ideas conveyed is a secondary, shallow or even non-

existent goal. But provided the professor has an articulable pedagogical reason for showing the

text or diagram in class, the use of display technology is justified.

4.   The Loss Of Good Classroom Dynamics And Socratic Dialogue

Do the classroom dynamics of a good Socratic "give-and-take" dialogue suffer

due to the professor's inflexible class agenda where the expected "answer" is already up, or just

about to appear, on the screen?

This is a valid criticism if the professor ceases to engage students by asking

tough questions and demanding precise answers. If a professor merely asks and answers all of

her own questions and hypothetical scenarios while students just watch and listen, then students

are being cheated and the professor is not doing much more than going through the motions.

Such a professor has "checked out" of the class and is presenting information unconcerned with

whether students are actually learning anythingfrom the presentation.

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[172]   So just because it is possible for a student to write a legal brief or memorandum using flowery,
unnecessary, poetic, creative language, it does not mean that the writing assignment itself is just a showcase for
such superfluous, flowery writing. It simply means that written words can and should be used to march a legal
analysis through in a helpful, lucid, articulate way instead of the student merely "showing off" his or her ability to
turn a witty or flowery phrase using unnecessary, marginally entertaining language and thereby lose sight of the
objective of the brief or memo.

But long before display technology was invented, professors who had "checked out" of teaching class (for whatever reason: health, chemical dependency, age, laziness, emotional or psychological problems) did not require display technology to disengage this way.[173] So if a law professor checks out of teaching interactively and uses display technology in the process, display technology is simply making clear the professor is just going through the motions. Again, the display technology is not to blame, the disengaged professor is.

a. But Does Display Technology Tend to Make "Good Professors Go Bad"?

Professors using display technology must resist the ease and efficiency of presenting material to the class if one is not also intellectually engaging with students during class. This is especially true if the professor gets behind in his or her course coverage/syllabus. Such a professor might ask: why spend a whole lot of class time asking students a series of long drawn out Socratic questions when one can easily click through a pre-packaged presentation and "cover" the material much more quickly? The problem is that a true learning experience for students is lost when Socratic engagement is sacrificed for time and coverage concerns.

But professors who do not use display technology are not somehow immune from falling behind on their syllabi and then are never tempted to sacrifice the Socratic method in order to catch up. Professors may use display technology as a shortcut, but they may also use the shortcut of simply doing straight lecturing (instead of Socratic questioning) in order to get back on track. So the real criticism here is of professors who take shortcuts that sacrifice the Socratic method, be it either through usage of display technology, or by lecturing through

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[173] *See* Catherine Arcabascio , "*The Use Of Video-Conferencing Technology In Legal Education: A Practical Guide*, 6 Va. J. L. & T 5**,** (2001) (arguing that an ineffective teaching style will only be exacerbated by the use of technology because if a professor cannot properly facilitate a class discussion then technology will only be one more thing to juggle).

material without using display technology, in order to explain the law to students instead of fully discussing it and exploring it with them. All professors should be cognizant of the time it takes to explore information with students and to engage in the Socratic method of teaching. For professors using display technology, if their display technology agenda gets so filled up with information that the professor is just itching to present, then there might be no class time left to engage with students. But technology or no technology, a professor must not get so excited to share his or her knowledge with the class that he or she forgets to allow the students the opportunity to engage, explain and defend positions in class.

To the extent that at least a portion of class should be used to impart, emphasize, or reinforce critical information, not just ask Socratic questions, display technology can help in keeping a professor organized instead of going off on tangents and possibly falling behind on the syllabus in the first place. Using display technology this way would eliminate the pressure to hurry through material without being "slowed down" by the all-important Socratic engagement of students in class.

Falling behind is a judgment call regardless of whether or not one uses display technology. It cannot be that professors, who would never get behind and never take a short cut to catch up, would now necessarily do so simply because they have begun to use display technology. If anything, display technology has a tendency to make professors move more efficiently in their class coverage. So, all professors must employ enough pedagogical discipline not to fall behind in the first place, but if they do, not to compound the problem by taking an unfortunate short cut – either by clicking through a display technology presentation, or

by doing straight lecturing if they do not employ display technology – to impart information to a passive student audience.

It can be tempting for some professors to tell students, "Let's just skip the Socratic routine and I will tell you what this case is about, what it means, and how it should be applied in slightly different situations in the future."   But just because a professor can do that, and may even be tempted to do that given their advantage in being more familiar with the cases and the law at hand, does not mean that the professor should take the easy way out and shortchange the students' opportunity to engage in class. We expect professors to teach responsibly and work with students in class, even though the professor can always just explain the answers or possible answers to questions. This was true before display technology was invented, so it should not be a surprise that it is still true when one employs display technology.

b.   The Inability To Predict Exactly How A Student Will Answer.

One limitation of the use of display technology is the professor's inability to predict *exactly* how a student will answer a posed question. So although a professor's first question on an issue can be displayed, after that, the professor must react to whatever the student says, and more importantly, how they say it, what they emphasize, why they include some information but omit other information, and what precise language they are using. The follow-up question is a reaction to the student's answer. So after the first question, display technology really cannot sharpen the student's answers while they are answering because the professor needs to pose follow-up questions on the spot as those questions have to be crafted to the precise language used by the student. Still, an outline of the necessary considerations may be helpful during the questioning process assuming the professor has a goal in mind in asking Socratic

questions in the first place. Also, slight variations to the hypothetical can be displayed as the Socratic questioning is taking place so students are clear about the beginning and changing assumptions being made, and a list of important considerations can be displayed after the Socratic questioning is completed. But the bottom line is that professors using display technology must not forget their important Socratic pedagogical function in class or class will be reduced to mere information transfer.

The deposition analogy from practice is once again useful here. One of the main advantages of taking a deposition over submitting interrogatories as a discovery device is that in a deposition, the attorney can ask follow-up questions.[174] It allows the attorney to probe and investigate that cannot be accomplished to the same degree with interrogatories prepared beforehand, no matter how well prepared. But these are the kind of questions that cannot be anticipated because they necessarily depend on the exact language the deponent uses to answer the previous question. And the longer the deposition goes, the further the attorney has to get into the responses actually given by the deponent. Thus, the follow-up question is dependant on the deponent's answer that cannot be known exactly until the precise moment the deposition is actually taken. But this does not mean that at least some difficult, pointed questions cannot be anticipated and that (visual) deposition exhibits cannot be marked and used to explore and investigate the case according to the deponent.

5.   Display Technology As Passive "Electronic Spoon-Feeding" Lacking Analytical Substance.

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[174]   *See* Mark D. McCurdy "*Obtaining Admissions In Depositions*", 74 Temp. L. Rev. 139 (noting the dangers of not using open ended and follow up question in order to probe into unknown areas during depositions). *See also* David M. Malone & Peter T. Hoffman, THE EFFECTIVE DEPOSITION 27- 31 (2d ed. 1996) (examining the advantages of using depositions as a discovery device.)

Is using display technology simply "electronic spoon-feeding" where the professor is reduced to a boring "information-giver," shoveling out legal information through slides, while the students become inactive, "information-receivers" who copy the images without ingesting the material or developing analytical skills in the process?   This might be the most common critique of using display technology. In a book and chapter therein entitled High Tech Heretic, *The Plague of PowerPoint,*[175] the author states the following about PowerPoint display technology:

> "In public speaking, PowerPoint is the coward's choice." . . . [It produces] a predictable, pre-programmed, pre-produced lecture, devoid of any human content. The audience might as well watch a videotape." . . . "What motivates an audience? Emotion. Passion. Fire. A sense of warmth, excitement, shared adventure. A PowerPoint-driven meeting delivers chilly, pre-programmed video graphics. You see graphs, numbers, and bullet charts. But dancing sprites and flashing logos can't inspire zeal, loyalty, outrage, or a clarion call to action."

This is a valid criticism if the professor believes that the function of class is simply to provide the students with nothing more than information. Not only is such a class boring, but it is also a very inefficient way to transfer information to students in the first place if that is the professor's only goal. It would be much more efficient for the professor to have the students simply read the professor's PowerPoint slides for themselves on their own instead of having the images read to them by the professor in a classroom setting. Indeed, typically when a professor wants the class just to ingest written information, the professor assigns readings in appropriate casebooks that the students can read on their own instead of using valuable class time for the professor to read to the students.

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[175]   Id., at 180-181.

But again, notice how this criticism can just as easily be made of professors who do not use display technology at all, but simply read from their notes or other prepared materials during class in a passivity-creating, boring manner. The professor's decision to read rather than to engage is the problem, not whether the professor reads from computer images on a screen behind them or read written text from their notes on the lectern/podium in front of them. And professors who actively engage students intellectually can do so with either display technology or no technology. So the use of display technology does not itself necessarily "make" a professor spoon feed information to passive students, just as the use of books in class does not necessarily "make" a professor use valuable class time to read long passages of text to students instead of actively engaging intellectually with those students.

This is not to say that at times key text from cases, rules, statutes, and constitutional provisions should not be read aloud to the class – obviously this can be appropriate, especially when the professor is evaluating the precise legal language of critical text. But the focus on the precise language should be the initial launching pad for the professor and the students to engage in an academic exploration of the text and its legal implications and the related consequences when the class considers different hypothetical circumstances. This academic exploration can be conducted more easily when the textual foundation is clear for all to see, the hypothetical assumptions are laid out and the class is literally on the same page parsing the same textual phrases or words. At all times the changing factual circumstances and the precise question pending are presented to the class so students can focus their intellectual energy where it belongs: on the correct legal analysis of hypothetical questions. But this is the beginning of the academic exploration in class where at each juncture clarity of the issues is

propounded; but this clear presentation is not, nor should it become, an end in and of itself devoid of critical legal analysis.

A good rule of thumb worth repeating is to make sure that every diagram or textual passage or bullet point displayed to the class serves some legitimate pedagogical purpose that will help make students better students and future lawyers. If not, then the information should either be assigned reading to be consumed outside of class, contained in a prepackaged handout of information, or omitted all together. So display technology can render a professor irrelevant in class if all the professor does is read the PowerPoint slides, just as a great textbook or even a perfectly summarized and helpfully detailed handout can render a professor irrelevant in class if all the professor does is simply read the text of the handout in class.

a.   To Use Handouts of Images, Or Not To Use Handouts of Images, That Is The Question.

Display technology not only allows the professor to project images onto a large screen but also to print out all of those images and then distribute them as handouts. But if the projected images constitute spoon-feeding, then do the additional printed handouts merely add to the student passivity problem? There are disadvantages and advantages to using handouts of the images displayed, and if they are used, then there are additional considerations regarding the timing as to whether they should be distributed either before or after class.

1.   Not Providing Handouts of the Images at All.

The rationale for not providing the images/text to students as handouts is that students are required to take notes (text), or reconfigure diagrams in their own drawings during class. This requires students to be more active, in that they must not only

ingest the information but they must write it out in their own words, which tends to enhance learning and recall.   However, if students merely copy and do not think about what they are transcribing, and worse yet, do not listen to what is being discussed because they are too busy writing, much is lost academically. Given this concern, perhaps the display technology images should be handed out before class so that students do not have to waste time copying and as a result have more time to actually listen and think in class.

2.   The Catch-22 of Providing Handouts of Images.

If the images on the slides are handed out before class, then students do not have to copy as much material during class. However, they can also be distracted by the handout because they can read ahead to see where class is going, and consequently they may be less likely to take notes, reasoning that most of the main points worth writing down are already contained in the handout. This is especially problematic if the professor asks a hypothetical question and sets forth the considerations and steps in the legal analysis that should be considered. If they are handed out, the professor, in effect, can never use display technology to ask hypothetical questions and provide possible answers because the answers would be contained in the handouts. The professor loses the important pedagogical technique of layering and building the class material and loses the ability to keep attention focused on the issues at hand because students can be distracted by what they can see is coming next. Finally, at least some passivity is created because the handout gives much information that the students may want to read later.

a.   Well Then, How About Handouts of Images *After* Class ?

If handouts are not provided until after class, then a possible distraction during class ceases to be a problem. At first blush, this seems to solve the dilemma, but it also creates its own problems. Students may take sparse notes because they know the handouts are coming anyway, so why bother to take notes? Also, students can become frustrated and decide that if they are going to receive the handouts anyway, it would be better to receive them before class rather than after class where they have to guess what they should write down. If they do not receive the handouts before class, they may try to take copious notes during class anyway so that their notes are not incomplete or confused when they try to couple them with the handouts distributed after class. Finally, this technique can only work for one year because the following year the students (who have friends who took the course the year before) will have copies before class of what is supposed to be handed out after class, unless the professor completely changes what is covered and the professor's class notes and preparations completely change year to year, every year.

b.   Requiring Students to Take Their Own Notes.

This handout issue underscores the importance of not allowing display technology images, the medium, to become the message. There is a simple self-regulating test here. If students can read all of your display technology images for class such that they get from them all of what a student who attends your class does, then you are doing nothing more than electronic spoon-feeding. But if a student who comes to your class engages academically beyond what is contained in the display technology images, then much more is going on pedagogically.

I have chosen to present visually what I have and let students take notes on the entire class experience. If they take too many notes, then they are making a mistake, just as if they tried to take notes of everything a professor said verbatim in a class where there was no display technology being used. If they take too few notes, then their lack of diligence will hurt them as it would in any other class. The way I have tried to address this problem is advise students not to write everything or copy every diagram used, but instead to use their judgment as law students in determining what they need to write down, and more importantly, what they need to think about during class. I often highlight (with a different font and color) key words that I think they actually should write down if they want, but I still leave it up to them what they should write, omit or summarize. This gives students an idea of what portions of the key text I think are the most important, but again it is up to them to decide, given their view and understanding of the material.

Most importantly, students should take notes that make sense to them in a way that they can use in the future. They should be writing ideas and concepts that occur to them and not simply be copying what I say and what I write/draw. They need to take notes about what I and others say about the text and images used in class. They need to practice a method of analysis learned in class on new hypothetical situations. Display technology can help a professor to organize an analysis, but the professor must engage with students and inspire students to conduct their own legal analysis of constantly changing legal and factual circumstances.

C. The Criticisms and Concerns with Display Technology Are Actually With Teaching Pedagogy In General.

Display technology, like other classroom technological applications, should not be feared or loathed for taking over the traditional law school classroom and rendering the professor as a mere ineffectual aid or helper in class. Nor should display technology be attacked as a cancer growing on traditional legal teaching methods such that legal academia must make a stand against the alleged death of intellectualism caused by using display technology in the law school classroom. Instead, the critiques of display technology should be understood for what they are, valid pedagogical observations for professors in general that apply regardless of using display technology. Sure there are some precautions and best practices that should be observed when using display technology in class, but that is a far cry from rejecting display technology altogether and putting one's head in the sand by refusing to acknowledge its teaching benefits and advantages.

CONCLUSION:

DISPLAY TECHNOLOGY -- A TOOL FOR THE

CLASSROOM, BUT NO TEACHING SUBSTITUTE

Technology is never a panacea. It won't make our laws more just, or make lawyers more ethical or collegial. But it is a valuable tool: a tool for making ourselves more efficient and more competent; a tool for making the legal system more accessible; a tool for making the legal profession easier on the legal professional.

– U.S. Supreme Court Justice Sandra Day O'Connor[176]

The art of teaching truly is a noble profession. Law professors, and indeed all teachers of any kind, should feel honored to have the awesome responsibility of helping other human beings come to understand an academic subject. There are many diverse communication methodologies, styles, and tools to help professors achieve their pedagogical objectives in the classroom, all of which are helpful and valuable to students in their own ways. I have attempted in this article to demonstrate that display technology is a wonderful new tool that should begin to take its rightful place along side the myriad of venerable, traditional law school teaching methods that have served law students so well for many generations.

Promoting deeper understanding, providing tangible reinforcement, and enhancing better retention by using visual computer generated images in class to communicate simultaneously and interact with students through two senses (sight and sound), instead of just one (sound), gives professors an important pedagogical option to help better achieve their educational

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[176]   Sandra Day O'Connor, *The Role of Technology in the Legal Professions*, LAW PRACTICE MANAGEMENT MAGAZINE, *cited in* Michael Arkfeld, the Digital Practice of Law, *supra* note 18.

mission in class. This visual focus on the material, not just the professor's words, comports with my general teaching philosophy that in class the professor should be more of a "guide on the side" to learning, rather than a "sage on the stage."[177] This means that rigor, difficulty, and perhaps even some verbal ambiguity and obfuscation by the professor all should play a role in challenging law students in class. Thus, if the professor's purpose were to ask a challenging legal question, and perhaps make it even more challenging to understand/digest by using sound/verbiage alone, then visual clarity at that point would obviously frustrate the professor's purpose, especially if part of that challenge involves the professor's verbal obfuscation "guess-what-the-professor-is-getting-at" purpose. Neither display technology, nor the chalkboard for that matter, should be used for that particular purpose.

However, assuming the professor does not just leave the students hanging in class by never clearly explaining or answering, or having a student explain or answer, the challenging verbal-only question, then display technology can help greatly in explaining the answer (or possible answers) for which the professor is looking by setting forth in a very clear and digestible manner the proper arguments/elements one could or should consider in analyzing the problem.[178] When the purpose is to elicit a sophisticated legal analysis to a very complex but

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[177]   I borrow this phraseology and imagery from Alison King's article, *From Sage on the Stage to Guide on the Side*, 41 C. TEACHING 30, 30-31(1993), to make the point that the legal subject matter should be the "star of the show" in class, not the professor, as some sort of brilliant oracle dispensing pearls of wisdom from above through Socratic showmanship. By saying this, I certainly do not mean to suggest that any professor currently not using display technology necessarily fits this description or that a professor must use display technology in order to focus on the material to be effective. Still, my belief is that, display technology or no display technology, the focus of class should be more on the course material, and not on the professor's persona.

[178]   Sometimes a professor may choose not to answer a pending question by the time class ends and instead allow it to "percolate" over time with the class so that students can grapple with it on their own over the course of perhaps a few classes. This technique can be effective, but at some point in the semester/year before the final exam, the "mystery" should be solved, and when it is, display technology is an effective way to convey the eventual solutions. In fact, display technology can be an effective way to ask and re-ask the question. Although

very clearly stated and digestible question in the first place, then display technology can help in both asking the question and demonstrating how it ought to be or could be answered by drawing it out from students and then visually reinforcing it.

That said, I am not so myopic and dogmatic to suggest that every law professor now needs to use display technology in his or her teaching and that if any elect not to do so, then they are short-changing their students. Teaching future attorneys is too important and colossal of a mission to reduce it to a rigid litmus test of teaching methodology do's and don'ts; not to mention the unabashed arrogance it would take for a professor to assume only his way is the best way, or the right way, to teach in law school, and any colleagues who might disagree must be wrong. In fact, that kind of rigid, close-mindedness is one of the traits law professors often must disabuse certain first year law students of who come to law school with either an inability or unwillingness to see other points of view. Because teaching and academic freedom are so important, professors should constantly be searching for, and learning about, and be willing to acknowledge the benefits of, new, deserving classroom teaching options that can help law students in their monumental quest to become attorneys.

Personally, using display technology (thereby necessitating my creation of extensive text and conceptual diagrams) has helped me to become more organized and structured in my own teaching and presentation of the course material. Presenting information and challenging law students in this tangible way has also forced me to take more responsibility for precisely what I am teaching and what specifically I expect the students to accomplish academically during each

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students need to see exactly how it is done, they eventually must learn how to do it on their own. If not, we stunt their intellectual growth as future lawyers as they never develop the tools they will need to be attorneys on their own. But it is a process, and the first step in the process is to promote clear understanding so that students eventually replicate the clarity of analysis that their professors should be teaching and demonstrating in class.

class. These positive results were a natural by-product of forcing me to formulate the

substantive text and images to be utilized as learning catalysts in class. In approaching cases,

problems, hypotheticals, and materials, this visual information medium has required me to

articulate fully, and prepare tangibly, the computerized images – in the form of written text as

well as conceptual diagrams and pictures – that help me to promote understanding, facilitate

efficient information transmittal, provoke discussion, and foster development of analytical skills

during class. This process has heightened my level of preparation by necessitating tangible,

textual productions to serve as a launch pad for the students' aural and visual knowledge intake

and analytical development, which goes beyond my preparation for leading verbal-only class

discussion.

　　If I have failed to demonstrate in this article how valuable a new teaching

technique/option that the use of display technology is, then I would encourage any skeptical

colleague in legal academia to give it a try and consider the possibilities in their own teaching.

Using display technology in class may not be for everyone. However, it just might be that once

it is tried, "seeing [will be] believing." In the end, if one can endorse the chalkboard as a

legitimate and helpful classroom-teaching tool, then it should not be such a large pedagogical

leap to likewise endorse display technology, which in many ways is just a more modern and

powerful chalkboard.　As such, because a chalkboard has always been seen as helpful -- and

certainly not as harmful, anti-intellectual or controversial -- so should display technology.

"Video will not kill the radio star," but it can enhance the overall artistic message by opening up

an additional avenue of powerful and effective communication.

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