Journal

BEYOND WORDS: THE ROLE OF GRAPHICS

A.   Facts Showing Sole Proximate Cause of the Injury

Plaintiff admits he injured himself by diving headf

railing of the deck attached to the house. The dive carried him

own fence and walkway

and into the four-foot-

deep, aboveground

swimming pool. JA 234-

236. The house deck is

about seven feet from the

water horizontally

about five feet from the

pool's own fence and another two feet for the pool's walkwa

vertical drop from the house deck railing to the water is abo

92; photo above. Supp. JA 549 (Def. Exh. B), is authenticate

affidavit. Supp JA 547.

7 FEET

10 FEET

New Tools Can Enhance Legal Writing

By Thomas G. Collins and Karin Marlett

In his legal writing classic *Working With Words,* more than 20 years ago Herald Price Fahringer reminded us emphatically: "A picture *is* worth a thousand words."[1] He urged lawyers to use charts, diagrams, key exhibits and photographs "to deliver a large amount of information to the reader quickly and effectively."[2]

Most important to the discussion here, Fahringer insisted that, whenever such a graphic is available to illustrate a crucial point, "reproduce it *in the body of your brief.* Locate it in that area where the issue is discussed. Don't make the court dig through a cumbersome record to find it."[3]

Placing graphics within the text being illustrated promotes clarity, brevity and convenience. How many words can be saved in describing how this car became wrapped around the utility pole by inserting the police report sketch, scanned from the record?[4] How much clarity and judicial convenience are gained?

28
Exhibit D—Maps of Accident Scene
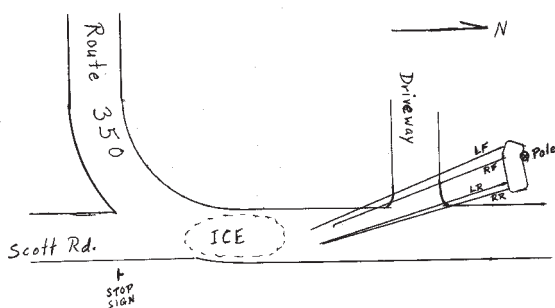
At the time Fahringer gave this advice, however, reproducing graphics in the body of a brief was no simple matter.

That Was Then

In the 1980s (and well into the '90s), using graphics involved significant tradeoffs. A commercial printer could prepare and insert graphics into the text of a brief the way books were produced. But that cost far more than most clients or cases would bear.

Reasonably high quality copies could be attached as appendix material. But that only partially solved the location and convenience problems. Separated from their textual references by many pages, the graphics failed to contribute all they could to illuminate ideas. And rudimentary cut-paste-and-photocopy methods resulted in poor quality, second or third generation images in the text, often obscuring, rather than enhancing, the communication.

This Is Now

Technology has changed all that. Capturing or creating graphics and embedding them in writing is easy now. Yes, *easy*. The software tools come preloaded on most computers purchased for law office use. The hardware needed besides the computer is a good quality scanner and a good quality color printer. Both are available for a couple of hundred dollars, or less, each.[5]

This article does not present detailed how-to instructions. These tools are no harder to learn than word processing software or e-mail. Every software package uses its own on-screen interface and terminology. Even dif-

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ferent versions of the same software occasionally make changes in their look and labeling. Attempting to teach the details in a journal article would merely leave the reader confused and frustrated. Scan something, open the editing software, find the tutorial (usually under Help), and play with it!

> *"It's not about the bike."*
>
> —Lance Armstrong

Why Bother?

The reasons why may be viewed from two angles. First, the desire to pursue excellence in legal writing fully justifies the effort to learn how to incorporate graphics. This was true long before Fahringer urged it. In 1613, Galileo published his *Letters on Sunspots*, which might be regarded as his first "brief" defending his scientific discoveries against charges of heresy.[6] In the excerpt shown here, when Galileo described his observations of Saturn, "word and drawing were as one. The stunning images, never seen before, were just another sentence element. Saturn, a drawing, a word, a noun."[7]
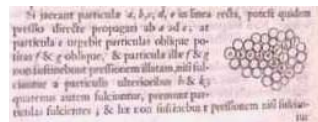
Other great thinkers before and after Galileo also embedded pictures in their writings. For example,

Da Vinci's notes (circa 1508–1510):

Newton, Principia Mathematica (1686):

Stephen Hawking took this tradition to a new level when he decided to publish a revised edition of his 1988 best seller, *A Brief History of Time*. The new 1996 edition was re-titled *The Illustrated A Brief History of Time*, and in the foreword Hawking noted, with considerable scholarly understatement, "I know that some people have found parts of the [first edition] difficult to follow." He then explained, "The aim in this new edition is to make it easier by including large numbers of illustrations. Even if you only look at the pictures and their captions, you should get some idea of what is going on." The book jacket noted that the illustrations were made possible, in part, by the advances made between 1988 and 1996 in computer graphics.

The ability to communicate ideas may be the most important skill a lawyer can master. Nearly every issue of this *Journal* contains one or more articles on legal writing. Yet nearly all of these articles seeking to improve legal writing focus exclusively on using words to communicate. Partly, this concentration on verbal skills may be rooted in a disregard for picture books as being for children, not for sophisticated, intelligent grownups – a kind of "pics are for kids" attitude. But if the goal of legal writing is communication, then maybe we need to take another look at those picture books.

Well-known research in the fields of education and psychology helps to explain why including graphics enhances communication of ideas. Anyone with children in school is familiar with the theories of multiple intelligences, or learning styles. At least seven have been identified and only one of them, linguistic, involves thinking in words.[8] Spatial learners think primarily in images and pictures and several other styles (logical-mathematical, bodily-kinesthetic, musical) use a variety of symbolic and visual cues that go far beyond words. Indeed, psychology research suggests that upwards of 93% of communication is nonverbal.[9]

These factors affecting the efficiency of communication do not disappear when we graduate from high school. The Web site at North Carolina State University posts an article by Drs. Felder and Solomon, with this advice for college students regarding visual and verbal learners: "Everyone learns more when information is presented both visually and verbally. In most college classes very little visual information is presented. . . . If you are a visual learner, try to find diagrams, sketches, schematics, photographs, flow charts. . . ."[10] Similarly, corporate training courses and self-help books are filled with advice on nonverbal communication skills.[11]

Perhaps the most familiar and most basic of these learning style theories is the left-brain, right-brain dichotomy. Left-brain people are linear-logical-verbal thinkers. Right-brain people think in holistic-intuitive-visual ways. Once again, this dichotomy follows us into adulthood.[12]

Now here's the sit-up-and-take-notice part for legal writers: the research concludes that "most" or "the majority" of adults are visual learners.[13] There is no reason to think judges, jurors, or clients are any different. Even more sobering, one study estimates we remember only 10% of what we read! Retention climbs to 30% of what we see (visual learning), or triple the effectiveness of the communication. Using two or more communication channels together pushes retention to 50% and higher.[14]

All of this points to but one conclusion. Combining verbal and visual information makes communication far more effective.

> *"How you gather, manage and use information will determine whether you win or lose."*
>
> —Bill Gates

As Edward Tufte puts it, "Words and pictures belong to-gether."[15] Excellence in legal writing, therefore, de-mands appropriate inclusion of graphical aids.

Coming at the "why bother" question from the other direction, the professional obligation to maintain a min-imum level of competence also suggests that lawyers should learn these skills. The main benefits of using graphics to illustrate complex issues are clarity and brevity. The example above, using a police report sketch of an accident scene, showed how these two goals of writing were served. Here's another example.

Take a medical malpractice case involving an injec-tion of a drug into the patient's lower back, near the spinal cord. The primary issue in the case was the ade-quacy of the drug manufacturer's warnings not to place the drug in direct contact with the spinal cord. The court needed to understand the anatomy of the spinal column in that area to fully consider that issue, but only as back-ground.

The relevant deposition testimony consumed over 20 pages describing the vertebral bodies, layers of tissue, and spaces surrounding the spinal cord. Attempts to re-duce that medical testimony to understandable prose in an all-text statement of facts never got below a page and a half. Adding a graphic made it easy to do in half a page. A glance at the labeled picture and a couple of sen-tences quickly lets the reader know that the drug had to be kept out of the subarachnoid space, outside the dura mater, to avoid contact with the spinal cord. This allows the reader to get right to the main issue, the adequacy of the label warnings.

Spinal Cord[16]
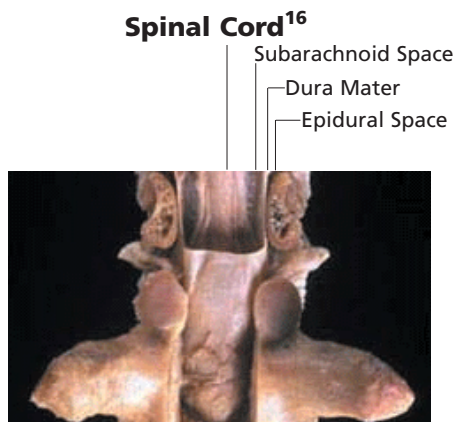
The title of a recent article drives home the important benefits of clarity and brevity: "An Attorney's Ethical Obligations Include Clear Writing."[17] That article cited numerous examples of cases where courts sanctioned lawyers or dismissed the claims of their clients because the lawyers failed to produce clear, concise writing.

The problem may run deeper than the quality of in-dividual pieces of writing, however. Observers of the profession have argued that digital publication skills are becoming essential for lawyers to remain competitive with non-lawyers – indeed with their clients themselves – who have increasing access to legal information. To re-main relevant, these observers say, to provide a worth-while service, *i.e.*, to survive, lawyers must adapt to the technol-ogy that is readily available for finding, organizing, packaging and delivering infor-mation.[18]

> *"It is not the strongest of the species that survive, nor the most intelligent, but the one most respon-sive to change."*
> —Charles Darwin

Thus, whether you view it as striving for excellence in legal writing or maintaining minimum competence, the result is the same. The basic graphics tools now available on nearly every lawyer's desktop seem des-tined to make these visual communication skills as basic to a lawyer's competence as writing well, or speaking well.

If so, the remaining question is how?

Practicing Graphical Excellence[19]

"Graphical excellence consists of complex ideas com-municated with clarity, precision and efficiency. Graph-ical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space. . . . And graphical excel-lence requires telling the truth about the data." These ideals sum up Professor Tufte's first chapter in *The Vi-sual Display of Quantitative Information*.[20]

But before elaborating on his "do" list, Tufte spends two whole chapters on the most important "don't": don't let your table, graph, drawing, or picture distort or misrepresent the information. He calls this principle *graphical integrity*.[21]

The issue of graphical integrity points to a second reason underlying reluctance to use graphics in legal writing: the notion that because many graphics are used to display numerical or statistical information, they are often used to lie. One suspects that such a mistrust of graphics prompted the Second Department's rule that, absent permission, "briefs shall not contain maps, pho-tographs, or other addenda."[22] Fahringer urged lawyers to seek permission, gently implying that the courts should be liberal in giving it (if not do away with the rule altogether).[23] Tufte offers a complete answer to this concern about misleading graphics in a single sentence. "But data graphics are no different from words in this regard, for any means of communication can be used to deceive."[24]

He also suggests that most people have "pretty good graphical lie detectors" and can spot attempts at graphic deception fairly easily. This seems consistent with the

research indicating that most people are visual learners and thinkers. Indeed, it may be that one of the very reasons for our cautious approach to information graphics is our ability to detect the ones that lie.

Yes, graphics done badly, or with bad intent, can be misleading. So can sloppy, or slippery, language. The answer is not to prohibit graphics, because graphics done well can be the most powerful, efficient and effective communication devices we have. The answer is for all who seek better communication to learn to use graphics well, which will also make us even better at spotting and dealing with those that aim to deceive.

One more thing, before turning to use of graphics, as such: Writing itself is a visual medium. Most serious advice on writing includes some page layout guidelines about generous use of white space, multiple blocks of text per page and the like. When you have something important to say in words, design principles can still help.

Recall one of Tufte's descriptions of graphical excellence: "Graphical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space." That sentence is full of important ideas. Focus on the sentence in your head, or read it out loud. Does it sound something like the following?

Don't Prohibit Stained-Glass Windows

At my first NYS Bar seminar on Appellate Practice in 1983, I had the good fortune to hear Fahringer speak on legal writing. I believe he was the first person I heard tell this story:

> A man once walked by a building site and saw three masons side by side, sweating over their work in the hot sun. He asked the first, "What are you doing?"
>
> "Laying bricks," came the reply.
>
> He asked the second man, "And what are you doing?"
>
> "Building a wall," came the reply.
>
> Then he asked the third mason, "And what is it you are doing?"
>
> "I am raising a great cathedral."

Fahringer compared working with bricks to his craft of working with words and urged us all to go build cathedrals.

I've thought of this analogy often over the years and tried to apply it in my work. As I've explored the use of graphics in legal writing, I've come to believe the analogy holds true. Adding graphics can be like installing stained-glass windows. Both help communicate the story behind the building and both make the whole more beautiful.

Rules limiting the use of graphics in briefs are like zoning laws prohibiting the use of stained-glass windows in cathedrals.

— Tom Collins

Graphical excellence is that which gives to the viewer

the greatest number of ideas

in the shortest time

with the least ink

in the smallest space.

The sentence was fine as Tufte wrote it. But it contains four distinct, individually important guidelines for making powerful information graphics. The above is one possible layout that would emphasize – and perhaps make memorable – each idea.[25]

The notion of printed words having a "sound" is common. Fahringer advised legal writers to find their "voice."[26] *The Elements of Style* put it this way: "When we speak of Fitzgerald's style, we don't mean his command of the relative pronoun, we mean *the sound his words make on paper*."[27]

Books and articles on writing often suggest reading a draft out loud to see how the written words sound. Like punctuation, sentence length, and paragraph breaks, the layout of the printed words on the page can reflect, support, perhaps compel, how they sound to the reader.

Now let's examine a few graphic design do's.

1. *Know why you're using a graphic*. Jacques Barzun's first principle for writing states, "Have a point and make it by means of the best word."[28] This principle is echoed by Tufte, "Good design is clear thinking made visible."[29] And again, from Hillman Curtis, "[F]or a design to be good, it has to be about something."[30] The first step, then, is to know what your point is.

The second is to decide if the best word might actually be a graphic.

Applying the four criteria for graphical excellence emphasized above can help the decision. For example, large quantities of data may often be presented more efficiently in a table, or a scatter plot, or a data map, than they could in words alone. A photograph or drawing may convey critical information instantly, where words would take a minute or two to absorb. Unfamiliar medical or scientific terminology could be illustrated with a graphic to save paragraphs, or even pages, of explanation. And a timeline frequently can present a chronology in far less space than text alone.

Graphics included without a clear purpose amount to "chartjunk"[31] and are distracting and even irritating to the reader. By testing the need for graphics against the criteria for graphical excellence, we can decide with some assurance when using them will enhance communication.

2. *Force visual comparison*. One substantive purpose graphics can serve is to compare data. This can be as simple as a two-column table, contrasting the opposing parties' testimony on key issues. Or, it can display multiple variables on a color-coded data map, allowing quick and effective comparisons of large amounts of information.

When using graphics this way, the comparative purpose drives the critical design principles, as well. In the data map example, care should be taken in choice of adjacent colors and shades, elimination of non-data ink, and other visual factors to bring forward the desired variables and thus enable and enforce their comparison.

The black-and-white aerial photo, shown here, was used in a case that involved a requested zoning variance for lot coverage greater than the 25% allowed by the ordinance. The white arrow points out the subject vacant lot. The photo was offered to show that most of the surrounding lots along the lakeshore have very large homes that cover substantial portions of their lots, far greater than 25%. Although there were affidavits and individual ground level photos in the record, this graphic enabled and, it was hoped, forced the viewer to compare the coverage requested for the subject lot to the others already existing in the neighborhood.

3. *Show causality*. Classic examples of graphics showing causality are found in cancer cluster maps. This map showed the distribution of cases of cancer and also displays the outline of a plume of soil contamination and the plant located at the beginning edge of the plume. Another example is Dr. John Snow's famous map plotting the deaths in the London cholera epidemic of 1854. The cholera death symbols clustering around and radiating out from the location of the Broad Street pump convinced the Board of Guardians of St. James Parish to order removal of the handle from that pump.[32]

4. *Capture complexity*. The point here is to show the relevant data. Show *all* the relevant data. The goal "is the clear portrayal of complexity."[33] Attempts to simplify the data at the expense of completeness breeds suspicion that something important has been omitted. In contrast, displays that bring clarity to complex information build trust. The viewer can see that all the data is being presented and that the designer respects the viewer's ability to interpret the data.

Moreover, in some cases, adding detail can actually contribute to the clarity of the display. Tufte provides numerous examples, as well as some graphic techniques (layering and separation) to enhance such detailed displays.[34]

5. *__Keep graphics adjacent to the text being illuminated.__* Most of the benefit from using graphics can be lost through poor visual design. Few design flaws are more irritating and distracting to the reader – and thus destructive to communication – than placing the graphic on a different page from the text that refers to it. Tufte calls this keeping words and pictures "adjacent in space, not stacked in time."[35] His references to space and time are significant.

Violating this rule wastes the reader's precious time. By disrupting the reader's concentration, it risks loss of attention. Separating words and pictures wastes space, too, forcing the use of references like "*see* Fig. 5-7" and the addition of boxes and captions to remind the reader that this graphic relates to a point made somewhere else, not in the text on the page where it happens to be found.

"Adjacent in space" is as close to a rigid rule as you will find in information design.

The adjacent in space rule could also be applied to resolve the running debate over footnotes and endnotes. It is not hard to see why some courts prohibit footnotes and insist that all the information be in the text. Open a law review or volume of *Federal Supplement* and you can see the rampant abuse of footnotes, some covering most of the page. But, once again, the fact that a communication tool can be abused does not justify prohibition.
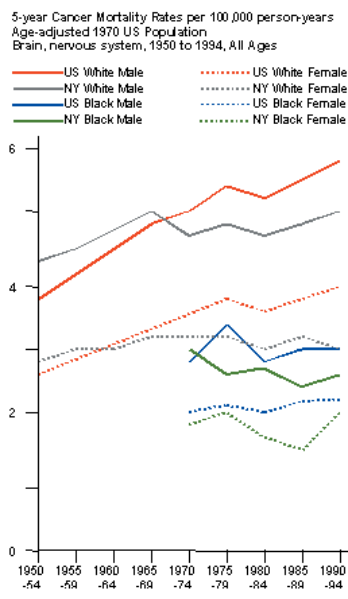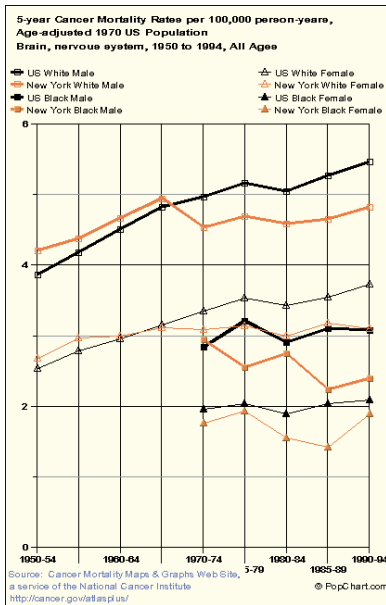
Footnotes can also be used well, to enhance communication.[36]

Tufte's solution is "sidenotes." By laying out pages with an extra-wide outside margin, notes can be set in that margin – immediately beside the text they supplement. Think of a three-column page. Combine two of the columns into a double-wide one, for the main text. Leave the other empty, except for an occasional, concise, well-crafted note. While this technique might not comply with some courts' current rules for briefs, the gain in clarity might well justify a motion for permission in a particular situation. And lawyers write many other types of reports, memoranda, and even formal letters.

Examine Tufte's books. His sidenoted layout virtually eliminates the distractions of reference citations in the body of the text that bog down lay readers of legal writing. The wide margins and occasional sidenotes provide striking visual appeal, thorough references, and some delightfully informative asides, greatly enhancing the primary message. Yet the design minimizes the distraction of the notes themselves, because the reader's eye remains at the same level on the page after glancing at the note. Adjacent in space.

6. *__Minimize non-data ink__*. Here we have the graphical equivalent of Strunk and White's "Omit needless words."[37] With graphics, minimizing non-data ink takes several forms. Tufte spends several chapters on these

various techniques, so it is not possible to explain them in full detail here. By summarizing a few of them, the principle can be introduced and, perhaps, a desire for further study aroused.

Most obvious are the erasure principles: erase non-data ink and erase redundant data ink. Stating them positively, Tufte puts it, "Every bit of ink on a graphic requires a reason."[38]

Too often the data get obscured or even lost in a maze of grid lines and decoration. For example, an expert witness in a toxic tort case might compare brain and nervous system cancer rates in New York and overall in the United States. The chart, produced on the National Cancer Institute's Web site, shows prominent grid lines, a non-data color background, and an array of symbols that require frequent references back to the key to follow.

By erasing the background and most of the grid, the data can be shown with a simple color coding that eliminates the need for the symbols entirely.

More subtle, but sometimes just as effective, the data-ink ratio can be improved by decreasing the weight (thickness) of certain lines, or their color (*e.g.*, from black to gray, or a semi-transparent color).[39] Tufte provides a striking example by redrawing a detail from a map of Rome made in 1748. Simply by "muting" the heavy inking of lines in the river, he eliminates annoying optical vibration. This also causes labeling and details like bridges and docks to stand out.[40]

Another method is using "multifunctioning graphical elements." For example, a single blot of yellow ink

on a map may give us many bits of data about a city: its location, its size and shape and, by varying the tint of yellow, its population range.[41]

Applying these principles requires exercising judgment – Tufte himself carefully appends the phrase "within reason." Consider the cancer mortality charts above. It is quite possible to differ over how many lines and how much ink should be erased to make the data most accessible before we begin to lose touch with the axes and labels that define the data points. The eye will usually fill in the grid without the lines being shown, but sometimes fine lines help.[42]

In writing, we must decide how many words are utterly necessary and which ones will best carry the meaning. So, too, in using graphics, we must decide how much ink is essential and which lines and forms are most effective. Both are art, after all.

7. *Use small multiples*.[43] Small multiples display information in a series of similar graphics in which one or more of the variables may change. They are especially powerful tools for visual comparisons. The familiar auto reliability charts in *Consumer Reports*, for example, display enormous amounts of information. Their small multiples layout allows easy comparisons between different years of the same make and model, or between the same component among different makes and models.

Data maps or photographs of the same location over a period of time can be arrayed as small multiples to highlight changes in a single variable such as air pollution or traffic counts. Or maps of the same area plotting different variables – such as zoning districts, locations of schools, incidents of petit larceny, drug and alcohol arrests, traffic accidents – can be shown as small multiples and provide valuable data for comparison and causation analysis. Attempting to crowd so much data on a single map would interfere with communication.

8. *Use color with a purpose*. Maps also exemplify the versatility of color as a communication tool. Blue can designate the location and boundaries of a body of water; several shades of blue can be used to show changes in its depth. Changes in color deliver information without the need for additional lines. Color can be applied to clarify tables, charts and graphs, without adding lines, too.

This is a critical point: any change in color on a graphic must indicate a change in the data. Too often, a graphic element is filled in with varying colors that show nothing more than the designer has discovered the "gradient" tool in the computer graphic software. This is more than just a waste of ink; it is confusing to the viewer.

Going back to maps – different colors for roads can carry information about their size, quality, accessibility,

ownership and toll requirements. Temperature ranges, the amount and kind of precipitation, and other weather information can be displayed at a glance using colors.

Color can also be used to call attention to a critical piece of information on a graphic, but there lies danger. If color has no other purpose than to call attention, then it becomes very much like shouting. Occasionally a message needs to be shouted. But more often shouting interferes with communication. Using color simply because you can is like typing your words in all caps. Very quickly the technique becomes obtrusive and the message may get lost.

Like graphics in general, color can be a powerful aid to communication – when used well. Learning how to use color is, therefore, very much worth the effort.[44]

Conclusion

Most of these guidelines come, or are derived, from sources such as Edward Tufte's books on visual information display[45] and Hillman Curtis's recent book on "new media design."[46] The brief summaries offered here should provide a starting point on the journey to graphical excellence, but only that. Graphical excellence, like writing excellence, should become a lifelong pursuit. As Curtis explains, new media design is part of a continuum, the history of art and expression. "Our tools may be new, but what we do is as old as cave painting."[47]

For those who may be thinking that it's too late, or these new tools are beyond them, Curtis notes that most new media designers are self-taught and still learning. "Because many of its technologies are constantly evolving, in a sense New Media will always be a level playing field. Beginners and longstanding designers alike are always on the cusp of a new era, always faced with new tools and challenges, and always prone to the same mistakes and victories."[48] Barzun says the same thing about writing, by the way: "All good writing is self-taught."[49]

There may also be the temptation for lawyers simply to hire graphic designers or outsource all the graphics work. Certainly there is a place and a need for specialized expertise in using graphics, just as there are times to bring in a specialist for research, writing or oral argument. But once again, there is a risk to professionalism. Using graphics as a communication tool makes it an integral part of formulating the argument itself. As Tufte notes, "Data graphics are paragraphs about data and should be treated as such."[50]

How many times have you found yourself in the middle of redrafting a sentence, struggling to express your idea, when you hit upon a new way of making your point, or even recognize a whole new angle on the case? Working on the design of your information graphics can have the same effect. If lawyers completely abdicate their role in designing the graphics intended to convey the crucial message of their case, they will miss some of those moments of epiphany.

Writing and graphic design are both communication skills. We should stop thinking of the two as separate. Quoting Curtis, "A common mistake of designers is thinking of themselves only as visual communicators. We're fortunate to speak the visual language fluently, but we also need to translate literal and thematic messages. In other words, we need to be bilingual."[51]

It is just as much a mistake for writers, lawyers included, to think of themselves only as verbal communicators. The audience uses both languages and many are more comfortable with the visual. With the tools available today, we all need to become "bilingual."

Two decades ago, Fahringer urged lawyers to "strive to find new and imaginative ways to persuade" by using graphics in legal writing.[52] Now you can.

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1. Fahringer, *Working With Words*, N.Y. St. B.J., Vol. 54, No. 3, at 167 (Apr. 1982) (emphasis in original).

2. *Id.*

3. *Id.*

4. This sketch and the other graphics used in this article that are based on actual cases have been redrawn or replaced with similar images to better illustrate the information design principles discussed, as opposed to the particular issues of those cases.

5. Mr. Collins, for example, works with a Dell Pentium II-300 (with 320 MB RAM), a Hewlett-Packard ScanJet 5P scanner (24-bit, 16.7 million colors, maximum 1200 dpi

resolution) and a Lexmark Z52 printer (color ink-jet, maximum 2400 x 2400 dpi). All are a few years old and (sigh), like most technology these days, much better models are currently available for less cost.

6. Drake, Discoveries and Opinions of Galileo 85, 102, 145–46 (1957).

7. Tufte, Envisioning Information 121 (1990).

8. Gardner, Frames of Mind: The Theory of Multiple Intelligences (1983); Armstrong, Multiple Intelligences in the Classroom (1994). It is important to note that everyone possesses all seven of these intelligences. The theory merely states that one will be the dominant, or preferred, style that makes learning and processing information easiest and most effective.

9. Mehrabian, Silent Messages (1981).

10. Felder & Solomon, Learning Styles and Strategies <http://www.ncsu.edu/felder-public/ILSdir /styles.htm> (accessed Mar. 5, 2003).

11. Wallace, Climbing the Learning Ladder <http://www.llrx.com/columns/guide69.htm> (last updated Nov. 4, 2002); Lewis, The Secret Language of Success (1989).

12. Hopper, Practicing College Study Skills: Strategies for Success (3d ed. 2003), summary available online at: <http://www.mtsu.edu/~devstud/advisor/learn.html> (last updated Nov. 5, 2002).

13. Felder & Solomon, *supra* note 10; Wallace, *supra* note 11.

14. Wallace, *supra* note 11.

15. Tufte, The Visual Display of Quantitative Information 180 (2d ed. 2001).

16. This example is based on a real case, but the image used here is different from the one used in that brief (simply because we found a better one to illustrate the point). Image adapted from: Terence Williams, et al. *The Human Brain*: Chapter 1: The Spinal Cord [Web document]. The University of Iowa: Virtual Hospital, 1992–2003, <http://www.vh.org/adult/provider/anatomy/ BrainAnatomy/Ch1Text/Section07.html>. Copy righted material used with permission of the authors, The University of Iowa, and Virtual Hospital, <http://www.vh.org>.

17. Davis, *An Attorney's Ethical Obligations Include Clear Writing*, N.Y. St. B.J., Vol. 72, No. 1, at 50 (Jan. 2000).

18. Granat, *Re-Training Lawyers for a Digital Age* (ABA TechShow98; available online at <http://www.digital-lawyer.com/digital-lawyer/retrain.html> (last updated Sept. 28, 1998)); Susskind, Transforming the Law (Oxford Univ. Press 2000); Robinson, *Stampede to Extinction?* (in Elder Law Advocate, Fla. Bar 1997–1998; available online at <http://64.78.52.120/article_stampede.htm> (accessed Mar. 5, 2003)). *See generally* Munneke, Seize the Future (ABA Books 2000).

19. The term "graphical excellence" comes from Edward Tufte's book, *The Visual Display of Quantitative Information* 13 (2d ed. 2001) ("Visual Display").

20. *Id.*, at p. 51. Professor Tufte has published three books on information design already: (1) *The Visual Display of Quantitative Information*, (2) *Visual Explanations* (1997) and (3) *Envisioning Information* (1990). He is currently working on another, to be entitled *Beautiful Evidence*. The title indi-

cates that this one should be of special interest to lawyers.

21. Visual Display, *supra*, note 19, at pp. 52–87.

22. 22 N.Y.C.R.R. § 670.10(d)(1)(iii).

23. Fahringer, *supra*, note 1.

24. Visual Display, *supra*, note 19, at p. 53.

25. For more information on typography and page layout, see the chapters "Type," written by Katherine Green, and "Print," written by Fran Gaitanaros and Fernando Music, in Curtis, *MTIV: Process, Inspiration and Practice for the New Media Designer* (2002) (hereinafter "MTIV"). MTIV stands for "Making the Invisible Visible" – the motto of author Hillman Curtis's new media design company <http://www.hillmancurtis.com>.

26. Fahringer, *supra*, note 1, at pp. 168–69.

27. Strunk & White, The Elements of Style 66–67 (4th ed. 2000) (emphasis added).

28. Barzun, Simple & Direct: A Rhetoric for Writers, p. 14 (U. of Chicago ed. 1994).

29. Edward Tufte, speaking at his one-day seminar in Boston, MA, on March 12, 2002.

30. MTIV, *supra*, note 24, at p. 209.

31. Visual Display, *supra*, note 19, at pp. 107–121.

32. Visual Explanations, *supra*, note 19, at pp. 27–37 (map at pp. 30–31).

33. Visual Display, *supra*, note 19, at p. 191.

34. Envisioning Information, *supra*, note 19, at pp. 36–65.

35. Edward Tufte, speaking at his one-day seminar in Boston, MA, on March 12, 2002.

36. *See, e.g.*, McAloon, *Defending the Lowly Footnote*, N.Y. St. B.J. at 64 (Mar./Apr. 2001) (footnotes "can explicate subtleties in an argument, while leaving the core unobstructed").

37. Strunk & White, *supra*, note 27, at p. 23.

38. Visual Display, *supra*, note 19, at p. 96.

39. Envisioning Information, *supra*, note 20, at pp. 36–65.

40. *Id.*, at p. 60.

41. Visual Display, *supra*, note 19, ch. 7.

42. Visual Explanations, *supra*, note 20, at pp. 18–23. *See* Visual Display, *supra*, note 19, pp. 102–105 (Tufte experiments with how many and which lines can be erased most effectively from a graph in a Linus Pauling textbook).

43. Visual Display, *supra*, note 19, at pp. 170–74.

44. MTIV, *supra*, note 25, at pp. 146–51.

45. Tufte, *supra*, note 19.

46. MTIV, *supra*, note 25.

47. *Id.*, at p. 15.

48. *Id.*, at p. 138.

49. Barzun, *supra*, note 28, p. 3.

50. Visual Display, *supra*, note 19, at p. 181.

51. MTIV, *supra*, note 25, p. 23.

52. Fahringer, *supra*, note 1, p. 167.