

Visual Literacy and the Design of Legal Web Sites*

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The importance of visual literacy for legal research has increased exponentially in the electronic environment. After explaining visual literacy principles and their relationship to Web design, Professor Falkow uses them to evaluate the construction of several popular legal Web sites. She also recommends practical approaches to cope with Web site design flaws.

¶1 Visual literacy concerns the ability to turn our perception of images into understanding. From the understanding of what we see, we proceed to thought and analysis. At first glance (no pun intended), legal research may not seem an endeavor that depends heavily on visual literacy, since legal information is overwhelmingly word- rather than image-driven. But for most researchers, sight is the sense through which we perform the task: we see the words on the page or the screen. Furthermore, as with all reading, our understanding of the full meaning of words we see is controlled by our interpretation of printing conventions: the layout of the words into organized sentences and paragraphs, augmented by visual cues such as headings and changes in typeface and spacing.

¶2 Visual literacy has always been important in legal research, but its importance has increased exponentially in the electronic environment. Many images now accompany the words in documents, from simple colors and lines to complex frames and graphic icons. How well have visual literacy principles been integrated into legal Web sites? Do the designs of popular sites such as Findlaw and government sites such as GPO Access enhance or hinder the research process? Do Web designs by the two leading commercial providers, LexisNexis and Westlaw, encourage researchers to find the information they seek or to stay in the databases for as long as possible? Do the variety and quantity of visual signals in electronic resources improve the experience of legal research when compared with those in print resources, particularly for the novice or occasional researcher? I propose to answer these questions first by explaining visual literacy principles and their relationship to Web design, and then by using those principles to evaluate the construction of several legal sites. As I explore the strengths and weaknesses of these sites, I will recommend practical approaches to using them so that researchers can better cope with the inefficiencies caused by their design flaws.

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Visual Literacy Defined

¶3 Visual literacy has been defined as “the ability to understand, and use images, including the ability to think, learn, and express oneself in terms of images,”¹ and as “a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences . . . [and which] when developed . . . enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment.”² Visual knowledge is “a primary means of problem solving” because “the process of moving around in mental images . . . takes us to the point of breakthrough and solution.”³

¶4 The academic study of visual literacy grew out of both psychology and the visual arts, as the physiology of perception was applied to classic concepts of art and design, such as composition and perspective. The term “literacy” was used to indicate that, like language, clear visual communication is based on a syntax, a set of rules that when learned and followed, organizes component parts, whether words or images, into easily understood messages.⁴

¶5 Scholars in the field have studied whether certain elements of visual knowledge are innate or learned, and have debated how much of our interpretation of forms—in particular, the representation of a three-dimensional world in two-dimensional images—is based on culture and experience.⁵ Although generally outside the scope of this article, these issues are significant for the analysis of legal Web sites in that researchers approach the process with expectations based on their knowledge of the legal system. For example, knowledge of the court structure in the United States carries with it some expectation that information on a court Web site or a LexisNexis or Westlaw database will be organized by jurisdiction and level of court. A law student who is taught to research first in print digests will take that experience to the Web and expect not only organization by jurisdiction but also classification of legal issues by topic. Exactly where the intersection of nature and nurture lies is not germane to the analysis, but the impact of legal culture on interpretation of visual images is. Most scholars of visual literacy agree that design should be based on the user’s perception,⁶ and that such perception is based on the user’s encounters with the real world.⁷

1. R. A. Branden & J.A. Hortin, *Identifying the Theoretical Foundations of Visual Literacy*, 2 J. VISUAL/VERBAL LANGUAGE 37 (1982), reprinted in DAVID M. MOORE & FRANCIS M. DWYER, VISUAL LITERACY: A SPECTRUM OF VISUAL LEARNING 109 (1994).
2. Int’l Visual Literacy Ass’n, at http://www.ivla.org/org_what_vis_lit.htm#definition (quoting ROGER B. FRANSECKY & JOHN L. DEBES, VISUAL LITERACY: A WAY TO LEARN—A WAY TO TEACH 27 (1972)).
3. DONIS A. DONDIS, A PRIMER OF VISUAL LITERACY 8 (1973).
4. *Id.* at 8–12.
5. *See, e.g., id.* at 11–14; PAUL MARTIN LESTER, VISUAL COMMUNICATION: IMAGES WITH MESSAGES 27–55 (2d ed. 2000); PAUL MESSARIS, VISUAL LITERACY: IMAGE, MIND, & REALITY 41–70, 165–83 (1994).
6. “The first rule of effective Web design is to design for your users and not for yourself.” BIIAN B. GILLANI, LEARNING THEORIES AND THE DESIGN OF E-LEARNING ENVIRONMENTS 133 (2003). The design of new technologies should match the “perceptual knowledge” of the target audience so that users avoid confusion, embarrassment, and delay. *Id.*
7. “[W]e rely on our past perceptual knowledge to interact with the new situation or new object.” *Id.* at 132. *See also* MESSARIS, *supra* note 5, at 27, 120 (discussing perceptual cues that people learn to help them interpret the real visual environment).

¶6 Moving one step beyond perception, experts in information technology urge that Web design be based not only on the user's visual literacy, but on what the user wants to do with the information once it's been successfully retrieved and understood. Research, like most information uses, is a dynamic process. One may change one's initial path based on the information found along the way.⁸ In other words, a researcher may intend to retrieve documents A, B, and C, yet upon finding and reading A and B, determines that C is not necessary but another, unanticipated, document D would be valuable. This happens all the time in legal research: a student finds citations in a treatise to three on-point cases, two in the forum jurisdiction and one in a different state. The student reads the two controlling cases, finds they rely on another same-state case, and decides (we hope!) to retrieve that additional controlling case. Noting that the forum state's law is quite well defined, the student decides (quite reasonably) that the persuasive authority from another court is no longer important to read.

¶7 Throughout this dynamic process, the student is calling upon his or her visual literacy to assist in the evaluation of the information that is being found. For instance, case citations are easily identified in part because of visual printing conventions (italics for the party names; court, jurisdiction, and date in parentheses, etc.). If the student uses the treatise's table of contents on LexisNexis or Westlaw, he or she finds the appropriate area of law in part by following Web-based visual hierarchy conventions (revealing the outline's subheadings and sub-subheadings by clicking on the **plus** symbol to the left of the heading). Visual literacy is thus one of the student's problem-solving tools.

Perception and the Laws of Gestalt

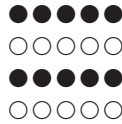
¶8 Before getting to the problem-solving stage, one must first see and identify the visual object. Gestalt theory posits that human beings follow certain universal laws of perception, all of which organize visual information into "groupings" so that disparate visual stimuli form a coherent whole.⁹ Different iterations of Gestalt laws have developed over time, but the main principles are the following:¹⁰

- *Similarity*, the principle by which we group items that share a quality such as color or shape. This causes us to see rows when confronted with a series of black dots on top of a series of white dots. We do not group the dots into columns, nor do we isolate each dot as an image unto itself.

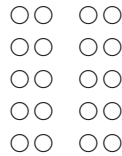
8. Anthropologists often refer to this process as "negotiation" or "goal shifting." Humans modify or abandon goals continually as they discover new information. See JOHN SEELY BROWN & PAUL DUGUID, *THE SOCIAL LIFE OF INFORMATION* 50-51 (2000).

9. See generally WILLIAM R. UTTAL, *A TAXONOMY OF VISUAL PROCESSES* 797-808 (1981); NICHOLAS J. WADE & MICHAEL SWANSTON, *VISUAL PERCEPTION: AN INTRODUCTION* 33-36 (1991); Hugh J. Foley, *Perception (Psychology)*, in MICROSOFT ENCARTA ONLINE ENCYCOPEDIA, at [http://encarta.msn.com/encyclopedia_761571997/Perception_\(psychology\).html](http://encarta.msn.com/encyclopedia_761571997/Perception_(psychology).html) (last visited Apr. 5, 2005).

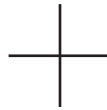
10. See UTTAL, *supra* note 9 at 797-99; GILLANI, *supra* note 6, at 138-40; LESTER, *supra* note 5, at 43-45.



- *Proximity*, the principle by which we group items that are closer together and not those farther apart. This causes us to identify two columns rather than four when series of dots are unevenly spaced like this:



- *Continuity*, under which we see a single line rather than a fractured one, and interpret direction as constant rather than changing. Thus, we see two intersecting lines below, not four lines meeting from four different directions:



- *Common fate*, under which we group objects that appear to be moving or pointing in the same direction. A flock of birds creates a coherent visual whole, for example. Within the same visual frame, three people facing left and four facing right create two groupings:



- *Closure*, which allows us to “fill in the blanks” for images that lack complete lines or contours. In the image below, we see a white arrow enclosed in a black circle even though the black circle is not closed on the left side.



¶9 By following these principles, designers can manipulate our attention. If a viewer has trouble grouping similar items, the dissimilar item will stand out. This tension can assist a researcher (e.g., focusing on the next critical hyperlink) or can complicate the process (e.g., offering a choice that is probably not the best next step).

¶10 “Selection factors” in perception are based on the Gestalt laws.¹¹ The complexity of visual stimuli forces us to select, unconsciously, what to notice first or what to perceive as more important. We will select the unusual, something that does not fit into the groupings we create when we see “the gestalt.” Furthermore, perception is relative: a blue hyperlink will not stand out if the surrounding text is blue, but will if the text is black. We organize and select based on concepts

11. See generally LESTER, *supra* note 5, at 44–45; MOORE & DWYER, *supra* note 1, at 39–42.

derived from basic perception principles, which are applied to the visual elements that form images: dots, lines, color, shape, direction, texture, scale, dimension, and motion.¹² These concepts include simplicity, pattern, balance, leveling, figure, and background.

¶11 The pull to organize by simplifying, and to detect patterns, comes from the very notion of Gestalt groupings, where patterns are sought in order to arrange complex stimuli into more easily understood image “chunks.”¹³ Balance involves a picture’s “center of gravity.” The brain “feels” a vertical axis and a horizontal axis, and perceives tension if the images are not distributed evenly along those axes.¹⁴ A lack of balance, or of simplicity, causes stress. Asymmetrical placement of one of the visual elements is stressful; the visual “surprise” it creates is called “sharpening,” the opposite of “leveling.” A leveled presentation is easy to understand while sharpening creates ambiguity.¹⁵ These selection factors can be crucial in sophisticated research: we do not want to be confused, but we also do not want to oversimplify something that is naturally complex. Visual ambiguity causes the researcher to pause and consider alternatives. A legal Web site should not look like a grade school text. Finally, the selection of stimuli into figure and background can be thought of as the preference for differentiating positive and negative elements. The relationship should separate some elements into the foreground as the positive or dominant ones. These create the figure. All else creates the background, the negative.¹⁶ The perception of the dominant element as closer to the viewer, and thus worth looking at first, is caused by the combination of many components at once, such as color, dimension, scale, and motion. This differentiation is critical to a researcher who needs to tune out the noise of advertisements on a commercial site or filter out the irrelevant options on a visually overloaded one.

Interpretation and Codes

¶12 Once our brains have selectively perceived what our eyes see, they attach interpretations to the images. Culture and experience clearly play a large role here, from the way we scan a page—left to right and top to bottom in cultures where writing proceeds in those directions¹⁷—to whether we understand the connotations implied by what we find therein¹⁸—such as whether what is in the foreground of an

12. DONDIS, *supra* note 3, at 15, 20–21.

13. One visual pattern that is especially relevant to text-based research is that of characters arranged in formats we recognize from prior knowledge and experience, which appear simpler than those strung together without arrangement, such as 10-17-1998 versus 10171998. See MOORE & DWYER, *supra* note 1, at 39–40.

14. DONDIS, *supra* note 3, at 22–23.

15. *Id.* at 27–28.

16. *Id.* at 35–37.

17. LESTER, *supra* note 5, at 40.

18. MESSARIS, *supra* note 5, at 169.

organization's Web site suggests its political bias. Yet even some of our interpretation appears to be hard-wired, common to all cultures. For example, triangular graphics suggest energy while square graphics suggest stability and constancy.¹⁹ We see continuous motion when presented with fast-moving still images (as in film and video) because of a cause-effect connection. Long sequences of fixed images do not exist in the real world and are illogical, so we interpret them in a way that makes sense to us, namely, movement.²⁰

¶13 Thus, some "representational conventions" used to depict the real world in two dimensions are universally understood, and others are culture-specific.²¹ Among the latter are signs, the "codes" used as shorthand to provide in-depth information in a way that the basic elements of perception alone—those colors, lines, shapes, etc.—cannot.

¶14 Symbols and "indexical" signs, which work on varying levels of abstraction, are not very relevant to my concern here, visual literacy as applied to research. But iconic signs, which are representational, are extremely so.²² Iconic signs are often divided for purposes of analysis into categories of simile, metaphor, and conceit.²³ A simile is an icon that directly represents exactly what it looks like, such as a file folder on the LexisNexis "Sources" pages, intended to mean a collection of related but discrete materials. A metaphor is indirect, providing a more abstract representation of something with similar attributes, such as the red stop sign in the LexisNexis Shepard's service, intended to tell the researcher to wait and look for possible dangers before proceeding. A conceit is essentially a far-removed metaphor. The toolbars in every software program are a good example. Without an explanation or demonstration, conceits tend not to be intuitive, but after much exposure, they seem quite natural to the user, such as a clipboard to indicate the "paste" function.

¶15 Whether consciously or unconsciously perceived, codes, like all aspects of visual design, can streamline research or throw it off track. For example, the red stop signs in Shepard's and the corresponding red flags in Westlaw's KeyCite enhance the research process by signaling to the researcher immediately upon seeing a new court opinion that the case may no longer be good law. In manual research, no such visual codes exist, or are even possible. How LexisNexis and Westlaw proceed to guide users in negotiating the information imparted by these codes is another matter, however. While the initial visual cue in an electronic cita-

19. LESTER, *supra* note 5, at 33.

20. MOORE & DWYER, *supra* note 1, at 340.

21. See generally MESSARIS, *supra* note 5, at 41–70.

22. See DONDIS, *supra* note 1, at 67–84; LESTER, *supra* note 5, at 50–51. "Indexical" signs are not representational but have a direct connection to what they represent, unlike symbols, which are arbitrarily assigned meaning. *Id.* Indexical signs can supply action in a film (e.g., a scene ends and its last image suggests what happens next) or can assign values or attributes to what is being depicted (e.g., details of a film character's appearance and dress can suggest either good or evil motives). MOORE & DWYER, *supra* note 1, at 345–46.

23. GILLANI, *supra* note 6, at 171–73.

tor enhances research by providing additional, valuable information at a glance, succeeding cues may hinder it by confusing the inexperienced researcher with either too many visual elements (such as the profusion of color in KeyCite: what do purple quotation marks mean and are they more or less important than green stars?) or too few (such as the relatively undifferentiated text on expanses of white space in Shepard's: which cases are more important and which less so as one scrolls down the list?).

Elements of Design

¶16 Graphic design is based on the understanding described earlier of how we perceive and interpret images. Design values such as balance, rhythm, and unity apply the Gestalt laws of similarity, proximity, and continuity, for example.²⁴ As mentioned previously, however, good design also incorporates opposing values to these, for the conscious purpose of creating tension and thus compelling the viewer's attention. Instability, irregularity, and fragmentation, as counters to balance, rhythm, and unity, respectively, provide contrast that can successfully guide navigation—but only if used intelligently.

¶17 Graphic design techniques are applied to the basic components of visual communication: the dot, the line, shape, direction, tone, color, texture, scale, dimension, and movement. Each element needs to achieve either harmony and leveling or contrast and sharpening. A layout that does not firmly convey the former or the latter is confusing to a user, frustrating his or her understanding of what the page is communicating and how—or even whether—it will help answer the researcher's question.²⁵

¶18 Generally, one would expect legal Web sites to conform to conservative design values, applying the techniques thought to convey a serious and reliable outlook. Symmetrical layouts; use of squares and relatively dense, plain text; moderate use of white space; and consistency in use of colors, fonts, and icons are among such techniques,²⁶ as are classical proportions,²⁷ particularly when applied to the organization of a site. Establishing the relationship among pieces of information through clearly structured visual hierarchies is critical to ease of research as well.²⁸ Content and form are perceived simultaneously; the design must carry the same message as the words on the page or in the document: “harmony” must be achieved.²⁹ One would also expect a legal Web site to be “economical” (“frugal and judicious in the

24. LESTER, *supra* note 5, at 136–39; DONDIS, *supra* note 3, at 85–99.

25. DONDIS, *supra* note 3, at 39–66, 92–93.

26. LESTER, *supra* note 5, at 136–39; *see also* GILLANI, *supra* note 6, at 212–13.

27. GILLANI, *supra* note 6, at 146. The “golden rectangle,” with a ratio of 1:1.6 between length and width, is considered an ideal visual balance. *Id.*

28. *See id.* at 148–50.

29. DONDIS, *supra* note 3, at 105–10; MOORE & DWYER, *supra* note 1, at 176.

utilization of elements”³⁰) rather than “intricate”; “predictable” rather than “spontaneous”; “neutral” rather than “accented.” Other design strategies are not as obvious; whether a page on a site should strive for “activeness” or “stasis,” “subtlety” or “boldness,” “flatness” or “depth”³¹ will depend on whether it is presenting documents or links, substantive information or choices of where next to proceed.

Web Design Principles

¶19 I will examine the specifics of Web design—particular typographical considerations, page layouts, site architecture—in the next section, as part of the evaluation of Web sites, since application of design rules to the actual designs will be more useful at this point than continuing the discussion on this rather abstract level. I will end this section, however, with a review of principles that have become accepted wisdom in the field. IBM’s Ease of Use group, a leader in interface design, has published and publicly disseminated the following guidelines for maximizing the benefits of one’s site to one’s users:³²

1. Simplicity: don’t compromise usability for function
2. Support: place the user in control and provide assistance
3. Familiarity: build on users’ prior knowledge
4. Obviousness: make objects and their controls visible and intuitive
5. Encouragement: make actions predictable and reversible
6. Satisfaction: create a feeling of progress and achievement
7. Availability: make all objects available at all times
8. Safety: keep the user out of trouble
9. Versatility: support alternate interaction techniques
10. Personalization: allow users to customize
11. Affinity: bring objects to life through good visual design

¶20 Most of these eleven guidelines follow directly from visual literacy, from the study of perception and how we select and interpret what we see. Web sites that present information based on patterns in the user’s knowledge and experience will be the most effective.

Evaluation of Particular Web Sites

LexisNexis

¶21 For a complex system, LexisNexis (www.lexis.com) manages to keep its screens relatively uncluttered. It is consistent in its use of lines, colors, and shapes

30. DONDIS, *supra* note 3, at 116.

31. *See id.* at 111–23.

32. IBM, Design Basics, at http://www-306.ibm.com/ibm/easy/eou_ext.nsf/publish/6 (last visited Apr. 11, 2005).

and in its application of scale and proportion. Although its terminology requires knowledge not only of legal research but of LexisNexis's proprietary labels for its features,³³ its design requires only minimal understanding of visual codes and conventions on the World Wide Web. LexisNexis assists the researcher by conforming to sound design principles. It provides a stable visual environment that offers many intellectual choices regarding how to conduct one's research but few formatting choices, making the research path simple and predictable. A deeper look at how LexisNexis presents both kinds of choices does reveal some visual challenges for the user, however.

¶22 Beginning with its Sources page, where one starts a classic search by choosing a category of material to examine, LexisNexis focuses a user's attention on some frequently used materials. It does so by distinguishing these materials through color and placement: black lettering and flush-left layout puts these choices in the foreground. Other materials, in blue and indented, harmonize with the gray and blue fill of the boxes. By becoming part of the visual background, they imply that they are down one or more levels in an informational hierarchy, an implication reinforced by the user's knowledge that blue means one must click on the link to find the material. Thus, although the Sources section of LexisNexis gets high marks for consistency in color and also predictability in maintaining the same layout on every page, it does not serve the researcher as well as it might. By leading the researcher visually to favor the sources it has selected, LexisNexis may be slowing down this step of the process for every person who wants to search something else. It also may confuse the casual searcher, who is given visual cues that some materials are more important, or even the only ones available, because they are at the top of the visual hierarchy. The problem here is that in an intellectual hierarchy, the substance of all those sources that recede into the screen's background are at the same level.

¶23 I thus question LexisNexis's selection of foreground sources. The selections on the main Legal page include some materials that are no doubt quite frequently used, such as the *United States Code Service* (U.S.C.S.) and United States Supreme Court cases. But my suspicion is aroused by the selection of **Federal & State Cases, Combined** as the very first entry in black type at the top left, making it the most noticeable choice on the screen. This probably encourages researchers to choose a source that is not often needed, and that when used almost always results in an expensive search, no matter what the customer pricing plan. Within the Sources screens, LexisNexis repeatedly causes narrower collections of materials, such as cases from a single jurisdiction or documents from just one administrative agency, to recede visually, despite the fact that they are more frequently what researchers want and are usually more cost-effective. These screens do not

33. For example, "sources" means a collection of materials within which to conduct your search; "search advisor" is a menu-based process designed to help figure out where and how to conduct a search.

visually match the typical researcher's expectations very well, so the researcher needs to move beyond perceptual knowledge and look further than the design cues. The most important lesson to learn, especially for the casual user, is therefore to explore source options before selecting one. Drill down into the list; process the full meaning of the visual stimulus before responding to it.

¶24 LexisNexis exhibits a few other interesting visual design choices that are not as obviously based on economic goals. The entire system values simplicity and flatness over complexity and depth. For example, in the **Enter Search Terms** box, users will not see a list of possible document segments; they must click to get a drop-down menu of segment choices. This furthers the goal of not compromising usability for function, and also that of giving more sophisticated users a choice for "alternative interaction."³⁴ Yet it sacrifices the goals of making all important objects visible and available.³⁵ The less experienced researcher is likely to forget that segment searching exists and may sacrifice time and accuracy by searching for terms anywhere in the text that could be pinpointed in narrower sections of documents.

¶25 The simple, flat design serves all users well, though, in the display of text links, which are visible and available at virtually every screen and offer a variety of research paths. The rhythm of LexisNexis pages moves firmly and unambiguously from left to right and top to bottom, as the text remains consistent in size, style, and layout. Thus, even the occasional user can follow the choices: with each visual scan across the screen, one finds the same level of options—you can do a new kind of search, or something new with your document, or something new with the search you've just executed—and each set of options is separated from the others with clear but subtle lines or shapes. Lexis.com hones to economical and predictable design principles. It believes in white space, and in square and rectangular boxes, which convey the appropriate sense of stability and reliability. There are no Web frames and the user cannot customize the proportions of any boxes that appear on the screen. The number of boxes per page is kept as low as possible, adding to the simplicity of the design. All boxes sit, balanced, on the "felt" vertical and horizontal axes.

¶26 A few functions on LexisNexis are harder to see and so are harder to use, such as navigational commands (moving from document to document, term to term, or page to page), which, curiously, are pushed into the background because they appear fallen, at the bottom of the screen in a narrow, pale blue pane overwhelmed by the black and white data that consumes most of the area above. Typical research requires extensive use of such navigation, so the occasional LexisNexis user may waste time looking for a feature like the "next term" link. The single accent to draw attention to the navigational functions is the word "GO" in red, a color that typically signals an alert or danger,³⁶ but is also LexisNexis's

34. See *supra* ¶ 19, notably items (1) and (9) in the list.

35. See *supra* ¶ 19, notably items (4) and (7) in the list.

36. See GILLANI, *supra* note 6, at 164.

logo color. With brief exposure, a user quickly learns that the LexisNexis red can be a positive alert as well as a warning, but if that user does not use LexisNexis often, he or she will have to learn that lesson anew in every research session.

¶27 LexisNexis is very conservative regarding scale: point size of type rarely changes. Typographical cues exist almost entirely of bolding, all caps, and italics, not changes in typeface size or font. Nothing in the design of pages suggests motion; to the contrary, each page seems static, inviting the user to stay and explore at his or her own pace. This conservative approach helps researchers who respond well to regularity and economy in design, and is suited to the content of the material. Legal research is supposed to be a serious rather than a fun-filled endeavor. In addition, the less elaborate the presentation, the less scrolling a user needs to do. Legal documents are long enough without frames and graphics highlights, which make the available space for text even smaller and force more scrolling and less ability to read easily on a screen.³⁷ For those who respond best to sharpened presentations, however, interpreting a LexisNexis screen can be slow going precisely because of its lack of depth. Still, Web designers can't speak to all users all the time. Their chosen language here is consistently one of flatness and neutrality.

¶28 Icons are few and are explained wherever displayed. File folders, file folder tabs, and sheets of paper, both plain and with blue or red arrows, are among the icons positioned to assist the user on the Sources pages. In the Shepard's service, icons indicating what kind of information is conveyed by the citing reference—among them, a red stop sign for “negative treatment” and a yellow triangle for “possible negative treatment”—are sometimes intuitive and sometimes not, but always explained if one scrolls down the page. Arrows appear in many places and in many forms, but their function is so obviously one of navigation within a search result that LexisNexis, rightly, does not bother to explain them.

¶29 The lack of more intricate graphics and the lack of visual depth tend not to focus the reader's attention on a particular part of the page. In concept, this is a good thing: the reader must decide what is important and is not influenced by the bias of the creator's presentation. We want providers of legal information to be as neutral as possible. But true neutrality is impossible to achieve and, in practice, LexisNexis does not always strive for it. For example, LexisNexis already provides substantive interpretations of the documents it displays with such features as the “treatment analysis” (followed, explained, distinguished, etc.) in Shepard's, and it already suggests in its visual design that a user take advantage of those interpretations, such as attaching the yellow triangle or red stop sign to a case that its editors think has been distinguished or criticized. These attention-grabbing colors and shapes encourage the user to click on the link, making the user spend more money on the system. This is no different from what legal publishers have been

37. “Real estate on the screen is always at a premium. The only real solution is economy of presentation.”
Id. at 213.

doing for more than a century with print publications. For example, annotated statutory codes have always provided cross-references to secondary sources such as encyclopedias and *American Law Reports* (A.L.R.) annotations, set out with bold headings and other typographical cues to encourage the user to read more in another of the publisher's series. I do not advocate that LexisNexis stop providing editorial enhancements and stop encouraging its customers to pay more to use them. To the contrary, I suggest that LexisNexis embrace the practice by providing more guidance and being honest in its visual displays that such guidance comes at a cost. The user has the responsibility of deciding when to incur that cost and when not to.

¶30 The Shepard's icons are perfect examples of this, and I do not fault LexisNexis for liberally sprinkling the case law databases with them. As a researcher, I accept that I must decide when to check "possible negative treatment" and when not to. What I would like as a researcher is more guidance within the Shepard's service itself—and I consider myself someone who generally responds well to LexisNexis's presentation of flat, balanced, and economical visual information. The citing cases are displayed in a relatively undifferentiated way, with an excess of white space. I must scroll a lot to scan the list. I must wade through a complete set of parallel reporter citations for every case before I see the court and date in parentheses, and I need to read this information because more often than not, I have scrolled past the bold heading (which is not terribly noticeable anyway because it is no larger and in no different font from anything else on the page) informing me of the jurisdiction. The pinpoint page cites within each listed case repeat information unnecessarily, so that my eye is attracted to the pattern of bolded "cited in" phrases—the Gestalt similarity principle inadvertently at work—rather than to the case cites themselves. The appearance of the substantive content in the Shepard's list as a whole starts fragmenting. I cannot group items into meaningful intellectual units; they are individual, disparate images containing information that must be processed separately, without benefit of any grouping principles.

¶31 Customizing the Shepard's list by treatment analysis or jurisdiction usually solves this problem, but a novice user will not easily understand how to customize. The links to all negative or all positive treatment, arguably the most important functions on the page, are visually undifferentiated from less important links, such as options for display or delivery of the Shepard's document, which fewer researchers will need or want. The leveling effect so valued by the LexisNexis Web designers works against the research process here, when a user needs some sharpening to focus attention on the most logical next step. Users need more contrast, either in the appearance of these links or in the design of the default Shepard's list itself, the "unrestricted" cases.³⁸

38. Another LexisNexis display lacking in cues, and in which too much white space and repetition of unnecessary information creates a distracting pattern rather than helpful one, is the layout of footnotes in cases. Rather than displaying notes at the end of the document, which LexisNexis does in most secondary source materials and which users tend to navigate well because of hyperlinks from note

¶32 One more instance in which LexisNexis's preference for neutral presentation is less helpful to a researcher than one with more "accent"³⁹ is its design of annotated statutory codes. In book form, U.S.C.S. uses a different point size for statutory language than for all the annotated material, allowing the reader to distinguish them on the level of perception rather than on the level of language. The amendment information and interpretive notes and decisions are in quite small type, allowing them to be scanned on the page under the larger, bold headings. Online, however, all is in standard LexisNexis font and size. As with the Shepard's list, the headings quickly disappear as one scrolls, causing a loss of context. The amount of white space and sprawling layout of information in headings can be helpful, as in other LexisNexis materials such as court cases, but in the statutory files they tend to fill prime screen location with too much ancillary information and force the reader, again, to scroll even more. The squibs of interpretive cases, by contrast, are not separated from each other by line spaces, as they are in the U.S.C.S. books, appearing as a continuous block of text rather than paragraphs. There are no easily processed information chunks.

¶33 While the lack of variation and lack of intricacy in the LexisNexis pages designed for interaction with the user—the screens from which basic search commands are given—seem intentional and suited to their function, these attributes in the document pages seem like they may originate from the process of transferring content from print to electronic form. As with converting any formatted document to plain text by stripping out word-processing codes, the U.S.C.S. files may have been more easily loaded onto the database and made more useable electronically without their typographical cues. The contrast between the appearance of the text of a section of the code and the appearance of the U.S.C.S. table of contents is dramatic: the latter, created for the electronic environment, exhibits all the consistency of the LexisNexis design mode—absence of distracting colors, a rectangular box to set out the information, easily understood "plus-sign" icons to expand the outline at the left margin, consistent typeface for all headings and subheadings but simple distinctions such as bolding to set off titles from chapters, blue instead of black for hyperlinks, etc.—to make the researcher's job of interpreting the information as easy as possible. Cues exist but do not distract. The design is unified and elegant, but not lacking in the variation necessary to distinguish one element from another. None of this holds for the section of the code itself. Thus, the most efficient way to research statutory codes, for both beginning and advanced researchers, will usually

number to note text and back again, it displays the content of footnotes immediately after the paragraph in which the note number appears. The note is separated visually by many line spaces, a series of dashes filling only half the page, and the words "Footnotes" above and "End Footnotes" below. Both balance and unity are disrupted. One's mind strains to form a common fate for those dashes: shouldn't they keep moving across the page until they reach the end? Within the main paragraph, meanwhile, the footnote number does not stand out at all from the rest of the text because there is no change in typography—no superscripting, no bolding, no extra spaces or graphics.

39. DONDIS, *supra* note 3, at 119–20.

be to use a combination of print and online versions of U.S.C.S.: use LexisNexis's table of contents to identify code sections, then pull the book off the shelf to read the statutory text and annotated materials more easily.

Westlaw

¶34 The Westlaw (www.westlaw.com) Web interface is uniformly denser than that of LexisNexis, with more text and graphics and less white space, though the complexity is not necessarily any harder to process visually. For example, log-in screens include photographs of people at the top or the left, presumably lawyers or law students. Although obviously not functional images for purposes of research, these visuals are always contained in a space separate from the "welcome" and "what's new" boxes and are therefore easy to scan past. The screen stays balanced by careful alignments of rectangular boxes, colors (mostly shades of blue, Westlaw's logo color), and the scale of the text.⁴⁰ Blue conveys a sense of calm; it reassures and appears neutral.⁴¹ Rectangular shapes and horizontal lines, which Westlaw aggressively favors, are stable yet suggest the possibility of growth along the horizontal axis.⁴² As with the lexis.com home page, the white field in which to type one's password on westlaw.com is accented and so becomes the focus of the entire page, as subtle outline graphics appear to frame the white space in three dimensions. This is exactly what the majority of researchers want: just show me where to start my online session.

¶35 Interestingly, the sign-on page for Westlaw's academic users (lawschool.westlaw.com) is considerably busier than the general sign-on page, intended perhaps to attract law students, a younger audience than that for westlaw.com, mostly practicing lawyers. The page includes not only more colors and boxes of information, but it is also dynamic, with changing text or images similar to the paid Web advertising we have become accustomed to.⁴³ Still, the log-in field is at

40. Balance does not necessarily involve symmetry; equilibrium is attained by putting equally weighted elements on each side of a visual field's center of gravity, but weight can be provided by any element—line, shape, density, texture, etc.—and so does not need to be the same on both ends. See DONDIS, *supra* note 3, at 22–23. In other words, a picture is easily balanced by text as long as the characteristics of the images are perceived as being equal in emphasis.

41. MICHAEL PASTOUREAU, *BLUE: THE HISTORY OF A COLOR* 180–81 (2001); see also DONDIS, *supra* note 3, at 50–51 ("blue is passive and soft").

42. LESTER, *supra* note 5, at 32–33.

43. And which many of us have become perpetually annoyed by. See *infra* note 46 and accompanying text. Motion generally forces an image into the foreground against a fixed background, but most researchers have trained themselves not to respond because of experience with ad-supported commercial Web sites. Serious researchers register ads as "noise," which has been defined as "anything added to the signal that is not intended by the information source." Randall O. Burch, *Effective Web Design and Core Communication Issues: The Missing Components in Web-Based Distance Education*, 10 J. EDUC. MULTIMEDIA & HYPERMEDIA 357, 360 (2001). As a faculty member a generation older than most of my students, I can personally attest to the noise phenomenon, as I consistently fail to notice information on Westlaw's law school home page. The result is that I often learn about new Westlaw developments from electronic discussion list postings by my peers rather than directly from the vendor.

the top left, where we start our visual scan, so despite the busy screen, the most common user option is still visually well placed. The biggest drawback to this image- and information-dense screen is that on most computers, the additional, advanced “Quick Research” option, which allows one to Find or KeyCite a citation in one step with entering the password, is not fully visible unless the user scrolls down the page.

¶36 This visual density illustrates another consistent difference between LexisNexis and Westlaw on the Web: where the former tends to minimize screen options and thereby devote more real estate to a single item, such as the retrieved document or the search query box, the latter tends to maximize screen options, thereby decreasing space occupied by the main item and visually demoting its importance relative to those other options, which are readily accessible at all times. Westlaw’s designers have chosen to provide more visual help to users who want to keep executing more research steps, while LexisNexis’s designers have chosen to provide that help to users who want to interpret what they have found. One approach is not necessarily better than the other, though arguably Westlaw makes research more efficient for more experienced users. For novice and occasional users, the visual theme on Westlaw probably encourages half and discourages the other half. The solution for confused users can only be to slow down: study each new window and remember what was in the prior ones before taking any action. Westlaw users may also want, more than LexisNexis users, to take advantage of the “Research Trail” (“History” on LexisNexis), a link that lists all documents viewed and searches executed in an online session, similar to the “history” toolbar icon in a Web browser.

¶37 Two major Web tools employed by Westlaw to accomplish the goals of availability and versatility are frames and “viewer” windows, which appear throughout the search system and show that Westlaw, unlike LexisNexis, values complexity and depth over simplicity and flatness. Customization is encouraged. Westlaw strives to make all choices available at all times and to let the user drive the interaction. Although these values make good sense,⁴⁴ Westlaw arguably applies them too often and sacrifices the predictability and reversibility that require simpler designs and more obvious visual cues to lead the user to the next logical step of the research path.

¶38 Most Westlaw screens contain two frames, left and right. Good visual literacy principles are apparent, as with LexisNexis, in consistent use of the basic color scheme, with shades of the same hue to place material in the foreground or background; utilization of square and horizontal boxes; and in use of unvarying typographical attributes, such as black text for most content and blue for hyperlinks and the same font in the same point size for all characters. But Westlaw is guilty, like LexisNexis, of manipulating its visual design to suggest

44. See *supra* ¶ 19.

that the researcher make certain choices that are probably better for Westlaw's bottom line than for the average user's research project. In its placement of directory options and the direction in which it suggests the user move, Westlaw also encourages selection of large, expensive collections of materials, such as all federal or all state cases, rather than the smaller ones more suited to the typical research question. This is primarily a problem for the novice researcher, though the occasional user will also feel some frustration at the number of clicks needed to find the right database in which to conduct a search. Because of the visual availability of so many options, the system is nevertheless designed to help the experienced researcher; for example, one may start a search in the left-hand frame by typing in a database name or document citation. This is typical of user-driven design, providing versatility to the knowledgeable customer by permitting him or her to type direct commands rather than continually select menu options.

¶39 Other obstacles exist for the beginning or casual researcher, who is likely to be confused by the similarity in nomenclature, and thus typographical appearance, among different features, such as KeyCite, KeySearch, Key Numbers, KeyCite Alert, and KeyCite Note. Still, the availability of so many screen choices may be the best design to suit most researchers at all levels of experience. One noteworthy set of choices, which distinguishes Westlaw from LexisNexis, is on the search query page, where field possibilities as well as connectors and date restrictions are visible additions to the search box. Westlaw also presents quite a different results screen from LexisNexis once a search has been executed. Westlaw highlights the search terms in yellow, which mimics the way people manually highlight printed materials with thick felt-tip markers. LexisNexis does this as well but never on the default results screen. The brightness and purity of hue is jarring, momentarily distracting one's perception of the rest of the content, but this feature probably makes research more efficient than LexisNexis's default results, which list "Core Terms" from each document, words that a programmed analytic has determined are the most important and so are not necessarily one's search terms.

¶40 Another major distinction between the systems is the addition in Westlaw results screens of "ResultsPlus," additional material displayed on the right-hand side that Westlaw has found outside of one's chosen database that relate to one's search terms. This clearly is another attempt to keep users online by examining more materials than they asked for, but it is not an intrusive attempt. The added links, on the right, enclosed in soft gray boxes, recede into the background, passively suggesting rather than overtly encouraging selection. Because the design's emphasis on the horizontal directs movement so strongly from left to right, ResultsPlus is easily incorporated into the user's research path but is also easily ignored, as the user decides. Again, Westlaw's design allows more customization, generally an important value, but one that tends to favor the experienced over the inexperienced user.

¶41 Frames return when the researcher chooses to look at the full text of one of the items in one of the results lists. Here, the busy quality of Westlaw screens

becomes apparent. The left-hand frame has tabs. Both frames have graphical icons, such as a book, color-coded and accompanied by a text label to indicate whether the document is a case, statute, treatise, etc., or a logo for a service within Westlaw, most commonly KeyCite. The choices within the frames can be staggering, particularly for statutes. Many links open additional windows which can be viewed while keeping the main window visible in the background or maximized to supersede the main window. While LexisNexis sometimes requires too much scrolling because its text is not dense enough, Westlaw can require too much scrolling because its text is *too* dense, not within a document itself, but throughout the screen because of all the options available in frames and windows around it.

¶42 Westlaw research is thus multidirectional because of its frames and viewer windows. It is more intricate, spontaneous, active, and random in its visual design than LexisNexis. Though simple, predictable, and economical on a “micro” level—an individual portion of a page—it is not so on a “macro” level—the process of moving through pages in the course of an inquiry. A researcher’s tolerance for these different attributes depends not only on his or her knowledge of Westlaw’s features, but on his or her level of sophistication at following complex visual organization. Thus, the reference librarian, accustomed to both online legal research and the ever-developing nature of the Web, will appreciate the spontaneous and intricate nature of Westlaw’s pages, each suited to the material or result currently in view. But the librarian’s patrons may well prefer the more rigid, neutral appearance of LexisNexis’s results and document screens, which tend not to change with the materials. There is one customization feature that may assist the occasional Westlaw researcher, however: the ability to modify the size of the frames, which can simplify the visual choices and thus help keep track of the research path. Narrowing, or even collapsing, the left-hand frame, which contains most of the display and search options, can keep one’s eye better focused on the document in the right-hand frame. By manipulating scale, the Westlaw researcher runs the risk of forgetting where those options are, but on balance gains the advantage of increased visual unity and thus concentration.

¶43 Paradoxically, Westlaw takes full advantage of the electronic environment by enabling researchers to move in so many directions, yet constantly reminds readers that its documents are taken from the print world. In most of the case law databases, it adds print reporter page breaks for purposes of citation, but instead of simply indicating “star” pages for different reporters in brackets or in bold, it disrupts the visual field of text by adding gray text with all the reporter volumes, pages, and abbreviations, continued to the margins with gray lines. By calling attention to print-equivalent documents, the electronic one appears fragmented; the gray bands are perceived under the Gestalt proximity principle as units distinguishable from the lines of text and make reading the document more difficult. Another reminder of the print world appears in many case law databases, where one can choose to view the document as an image of the print West reporter by

opening a PDF file (and incurring an additional charge). Also, although judicious in its use of graphical icons, Westlaw tends to use ones that are paper-based, not stopping at the conventional use on the Web of file folders and pieces of paper, but moving on to spiral notebooks (for KeyCite Notes) and the same key symbol that has been used in West Digest books for more than a hundred years. Westlaw provides estimates of print page lengths for most materials. Finally, it divides large documents into parts, so that users cannot seamlessly scroll from the first word to the last and instead must click on a “next part” link, akin to taking the next physical volume of a multivolume work off a library shelf.

¶44 The one part of Westlaw that exploits many colors and symbols is KeyCite. More noticeable than the text they annotate are the green stars, purple quotation marks, and red and yellow nautical flags. Unlike in LexisNexis, where an explanation of all symbols appears on each page if one scrolls down to the bottom, in Westlaw one must click on a help link to discover what these mean, though as symbols, they are perfectly suited to the meanings they convey. Users versed in American culture will know that more stars are better; that green means go, yellow is a warning, and red means stop; and that quotation marks mean that somebody’s words have been repeated verbatim, though whose are repeated where takes knowledge of the KeyCite service. Of course, although more green stars may suggest, by themselves, that the cases they annotate are “better,” this begs the question: better in what sense? Again, the icons help the experienced researcher significantly more than the novice, who will need to click back to the KeyCite explanation page to confirm that the stars indicate a quantitative measure of how much the cited case is discussed rather than a qualitative or editorial assessment.

¶45 While KeyCite’s use of coding is effective for some users, its use of typographical accents is not effective for anyone. Citing cases are followed by bolded characters indicating which headnotes in the cited case are the ones being discussed. If the cited case has a parallel reporter with another set of headnotes, both are included. The text becomes unnecessarily complex and draws the reader’s attention to information that is usually less important. More important information, such as the jurisdiction of the citing case, is hard to pick out from the long, undifferentiated, plain text of the citation, which includes all parallel reporters. A researcher must take more time to figure out how much a so-called “negative” case matters in terms of its authority, either by this painstaking reading process or by customizing and re-customizing the list using the “limit” function to show different jurisdictions separately. Furthermore, that function, the **Limit KeyCite Display** option, is at the bottom of the right-hand frame in tiny type and embedded in a gray band, suggesting its relative lack of importance in comparison to some of the options in the left-hand frame, such as **West Key Numbers**, **Table of Authorities**, and **Full-Text Document**, which are in bold and stand out against their pale blue backgrounds, surrounded by lots of empty space. On such an intricate screen, one’s eye is drawn to that restful space rather than to the dark band at the bottom, which seems to

provide mere ballast to balance the text above. Visually, one must work too hard to find one of the most useful features in KeyCite research. Might Westlaw want researchers to use the options that alert their attention more easily? These problems hinder the process, for all researchers, of evaluating search results.

Findlaw

¶46 Students in my advanced legal research course always complain of visual overload when they use Findlaw (findlaw.com). The confusing nature of the site is probably caused by its desire to be all things to all people: a legal resource for both professionals and laypersons, and for everyone from academic researchers to vendors. Its home page displays several large boxes, each addressing a different audience: For the Public, For Legal Professionals, For Corporate Counsel, For Business, and For Students. Three more boxes announce Latest News, Legal Analysis, and Marketplace. But the division of information isn't always intellectually sound, and the appearance of information isn't always visually sound. Visual overload results from problems of instability and asymmetry, randomness and variation, and inappropriate scale and proportion. Organization, emphasis, legibility, and unity are all sacrificed to some extent.⁴⁵ Additionally, the commercial nature of the site interferes: too much of most pages must be given over to advertisers, which creates noise and reduces available information.⁴⁶ The result is that a researcher who wants to use free, reliable legal information has to spend a lot of time exploring the choices. The site's design does not support serious legal research in its navigation or interface.

¶47 Examples of instability and asymmetry start with the home page, where darker shading in the boxes marked Latest News, Legal Analysis, and Marketplace skews the balance to the right-hand side. Users focus on these categories and try to assess quickly whether the visual cue has led them to the right part of the page to begin research, but the assessment is more difficult than it needs to be because the text within the boxes is also unstable. Bullet points should help group information, but their pattern is hard to pick out because the text varies too much in color, bolding, and spacing, causing distraction. To make things worse, there is not enough white space: Web pages with dense text need lots of line spaces or they are difficult to read.⁴⁷

¶48 The directionality of research is often ambiguous. GO buttons do not always clearly suggest what the user will see upon arrival: a full-text document, another list of choices, or a product advertisement? The constantly changing typography, use of shading, and use of images (such as a person's head shot) add even more guesswork to choosing a research path. The visual signals seem

45. See DONDIS, *supra* note 3, at 104–27; MOORE & DWYER, *supra* note 1, at 174–79.

46. See Edward Tufte, *The User Interface: The Point of Competition*, BULL. AM. SOC'Y INFO. SCI., June/July 1992, at 15, 15.

47. Burch, *supra* note 43, at 363.

random, and the user becomes wary of trusting his or her instincts—that is, trusting his or her selections based on perception—after just a couple of clicks that lead to unexpected pages.

¶49 Inappropriate scale and proportion are demonstrated by many of the Web directory pages. Bullet points are placed next to materials that do not all occupy the same place in a hierarchy. Columns, indents, and bolding are inconsistent. While these design faux pas may not present obstacles to practicing lawyers, who do not need a tidy visual display to pick out court hierarchies or branches of state governments, law students usually do. The “incidental patterns” created by poor design do not convey information, but rather increase the noise level and reduce the “signal,” the information itself.⁴⁸ Findlaw’s design also tends to be top-heavy, violating the “felt” axis and causing the now visually unsteady researcher to lose balance and therefore to lose an understanding of how the information on the screen fits together. Interestingly, one part of Findlaw that is perfectly proportioned, symmetric, predictable, and otherwise conforming to visual literacy principles is the Site Map, accessible only if one scrolls down to the extreme lower right, the least noticeable part of the page.

¶50 Not surprisingly, more thought appears to have gone into the design by advertisers of their paid spaces on the right of the screen. The ads distort the scale of the page because their text is larger and some include images or motion, momentarily confusing the viewer regarding what information is being placed where. But within themselves, they tend to be balanced, unified, and transparent. Their colors divert the viewer’s attention at first, but he or she then quickly learns that on this site, if the information is not in black and white, or a blue hyperlink, it is not serious content.

¶51 Internal pages within Findlaw tend to suffer from the same problems described above. Shapes and colors, though consisting mostly of rectangular, shaded boxes, often throw off the balance of a page. Typography is not consistent among the different kinds of materials, with different fonts, sizing, use of bolding and italics, and use of icons to accompany text varying from the Professional to the Public to the Corporate Counsel areas. Indeed, the latter area takes a user off the main Findlaw site altogether, without warning, and onto corporate.findlaw.com. Use of color itself is inconsistent; sometimes the fill color of a box is yellow and sometimes it’s blue. The former will bring the box into the foreground and the latter will hold it in the background, unless the yellow is very pale or the blue is very saturated.⁴⁹ All four permutations appear at points on Findlaw, drawing attention to the “data-container” rather than to the data itself.⁵⁰ Lack of predictability in visual cues adds to the researcher’s burden in figuring out what content is trustworthy in substance and what is not.

48. See Tufte, *supra* note 46, at 15–16.

49. GILLANI, *supra* note 6, at 164–65; DONDIS, *supra* note 3, at 50–51.

50. See Tufte, *supra* note 46, at 16.

¶52 Finally, the site architecture suffers from the same lack of a coherent plan. Although it seems to offer a hierarchical structure, it does not use this organizational principle consistently. Sequencing of material does not always proceed in one direction, such as when one clicks on **Workers' Compensation** in the home page's Public box and is brought to the general Accidents and Injuries page. This is for purposes of entering a zip code, required for using the Public section of the site, but it confuses the user, who is as likely to try clicking again on another **Workers' Compensation** link on this page as he or she is to start entering a zip code.⁵¹ Another example is the tabs that read Home, which may return one to the Findlaw home page but at other junctures may go back to the first page of a particular section. The Findlaw logo and other banners, such as those for West products and services, are not consistently "clickable."⁵²

¶53 The most consistent architecture, thankfully, is in the Professionals part of the site, where our serious researcher will spend the most time. But should our researcher venture into News or Analysis or Corporate Counsel, all areas with some valuable content, he or she will struggle to cope with the many violations of IBM's "Ease of Use" guidelines:⁵³ actions are neither predictable nor easily reversible; prior knowledge does not always guide users to where they expect to go; progress is too often thwarted to provide a feeling of achievement; users constantly get into trouble.

¶54 The bottom line on Findlaw is that unless used habitually, such as for current awareness in a particular area of law, it is too visually confusing to be an efficient source for legal research. Only if one has mapped and memorized a route to get to specific information can one navigate free of visual ambiguities.

GPO Access

¶55 One might expect GPO Access (www.gpoaccess.gov), a "Service of the U.S. Government Printing Office," to feature red, white, and blue. One might not necessarily expect, though, to find such a large array of images, both graphics and photos. On the home page, users can click on a photo of the Capitol to see legislative materials, a photo of the White House to see executive branch materials, and a photo of the Supreme Court building to find judicial materials. These images are literal; most of the others on the page are simile icons, directly connoting an idea. Thus, a computer icon stands in for the A-Z Resources List, a supermarket cart

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51. The visual focus of the page is unambiguous; the user is strongly encouraged to enter a zip code because the field, in yellow, appears in the foreground. Since many Internet users are wary about privacy, however, researchers may well look around the page beyond the focal point to see if the information can be obtained anonymously.
 52. Experienced Web users often ignore banners, or assume they have no clickable space unless there is a clear visual cue that the banner is a link. Navigation potential, if not obvious, is lost, especially by someone focused on reading content. Louise McGillis & Elaine G. Toms, *Usability of the Academic Library Web Site: Implications for Design*, 62 C. & RES. LIBR. 355, 364 (2001).
 53. IBM, *supra* note 32.

brings a user to the online U.S. Government Bookstore, and a cartoon drawing of Benjamin Franklin gets to "Ben's Guide to U.S. Government."⁵⁴ These graphics are complemented by stable, balanced groupings of text that make the home page extremely easy to understand and help the screen avoid being as dull as the straightforward organization of the text would otherwise be.

¶56 The home page of the Office of the Federal Register (www.gpoaccess.gov/nara), which is the starting point for many serious legal researchers, unfortunately has less to recommend it in terms of visual design. The deep blue and red colors of the GPO's heading design are not balanced by any strong shapes or other compositional elements below. A page whose focus stays on the upper left, with no cues regarding how to scan down and across, is not that easy to read. Another problem is the graphics: the covers of print publications are reproduced to the right of their description and link to the electronic equivalent. These reproductions are rather fuzzy, and the lack of sharpness makes the images appear textured while the rest of the screen, text and boxes appear flat. Viewers may strain to read what is on the covers, yet they fail to add meaning to the screen. Though perhaps intended to confirm for experienced print users that the electronic item is indeed the one they seek, the images probably fail to do so most of the time because the covers are too small to read. They are also inconsistent: the scale is wrong (the C.F.R. book and the *Federal Register* issue are the same size on the screen, which is confusing to the researcher who knows that the latter is much taller and wider than the former) and the images are not all the same size, throwing off the rhythm of the flow of information as one scrolls down the page. The page is neither an accurate representation of the three-dimensional print world nor a harmonious facsimile, confounding experienced and novice researchers alike.

¶57 Internal pages fare about the same regarding poor conformity with some basic visual literacy principles. Fortunately, however, the pages are designed to provide essentially one piece of information at a time, so a screen that is not as easy to read as it might be is still fairly easy to understand. This contrasts with

54. The one nonsimile icon is for the link to Locate a Federal Depository Library, consisting of the Depository Library logo, a stylized eagle whose wing encircles a book, well known to all librarians. A conceit that combines the symbol of American freedom with the symbol for information, it is, as intended, readily recognized by people who have been exposed to it but takes a bit of study at first. See *supra* text accompanying note 23. Three other observations: First, the GPO Access logo is a perfect demonstration of the Gestalt principle of closure. See *supra* text accompanying notes 9–10. The "P" is not an actual image but our eyes create it from the suggested outlines of the "G" and "O." Second, GPO's decision to add a link on almost every page of the site to "Ben's Guide to U.S. Government," complete with the cartoon image of Mr. Franklin, mystifies me. A researcher looking at the *Federal Register* or public laws, who presumably knows what those materials are, does not need a guide designed for elementary school students. The image is often the only graphic on the page and thus distracts unhelpfully. Finally, given the sophistication of the graphics, which are elegant and intuitive, the designers appear, oddly, to have been at a loss for how to represent e-mail. The icon link for "help" includes a stamped envelope and a telephone, representing information on where to write to or telephone the GPO, but the word "E-Mail" is superimposed on those two images to indicate that one may also send an electronic message.

Findlaw, where too much information is too often presented simultaneously and the researcher is slowed considerably by the process of pulling out what is valuable and figuring out where to go next. Thus, although the GPO pages suffer from the same problem of changing sizes of type for no apparent reason, this does not cause any momentary confusion about what the researcher will find if he or she clicks on a link. Research proceeds in a single direction, or in easily reversible directions, with use of the search and browse features. There are no ambiguous icons or links. Most pages contain a huge amount of white space, causing the researcher to scroll too much, but this is not a major obstacle considering that the site is a free government resource.⁵⁵ The site's primary design value is that of safety: users are protected from making errors.⁵⁶

¶58 The display of search results may be faulted for being visually boring, but it is unambiguous. The monotony of the results list, which puts in bold the document citation, title, size, and relevancy ranking and puts in blue the hyperlinks to the text, PDF version, and/or summary, is certainly economical. Wherever bulleted or indented lists appear, such as the A–Z Resources List, all items identified by the same bullet or indent occupy the same hierarchical level. Wherever graphics or photos appear, they are discrete and appropriate to the idea they convey, such as the United States map on which one can click a state to find addresses and Web sites of federal depository libraries. Color seems the only consistent design challenge, as pastels clash with deeper hues, causing momentary distraction. Such jarring, though not a significant hindrance to research, can be disconcerting to occasional users who need to readjust constantly to the changing presentation of information. Whenever balance is restored and all text is on the same plane, without color accents, GPO Access is only difficult for the beginner or infrequent researcher regarding intellectual content, such as search protocols, and not regarding its visual literacy.

Thomas

¶59 Thomas (<http://thomas.loc.gov>), the legislative information site of the Library of Congress, is more intricate in design than the GPO Access, but I certainly would not call it intricate in any absolute sense. Closer to LexisNexis in its simple yet elegant use of subtle colors and patterns, it succeeds under almost every visual literacy principle in its explanatory and search pages. Its appearance changes significantly with search results, however.

¶60 On its home page and all the pages to which one links from the home page, the design is consistent in use of stable boxes and grids, balanced presentation

55. In other words, one's tolerance for any inefficiencies on LexisNexis or Westlaw, for which researchers (or more accurately, their institutions or clients) pay a great deal of money, should be close to zero, while one's tolerance for inefficiencies on a site funded by tax dollars should be considerable. One's tolerance for inefficiencies on a commercial site like Findlaw should be quite low because although one gets the benefit of its free information, one also must put up with advertising and other marketing ploys and must expend a great deal of effort evaluating the reliability of the information.

56. See *supra* ¶ 19.

of text on both horizontal and vertical axes, and colors. Its central box is even a “golden rectangle.”⁵⁷ Separation of boxes exploits the Gestalt principles of continuity and closure: we perceive boxes even when only white space appears between fill colors or text. This keeps the design economical and understated, attributes that assist understanding because they are harmonious with the serious nature of the documents on the site.⁵⁸

¶61 Unlike all four sites examined earlier, Thomas changes fonts within the same page, but it does so in a consistent pattern. Some links are serif and others are sans serif;⁵⁹ search templates may combine both. Yet the groupings of information are quite clear. For example, headings are frequently in one style while explanations below them are in the other. The difference in intellectual content is matched by a typographical cue that aids research.

¶62 Thomas uses a pale gray-brown and a pale peach as its main color scheme. These provide background fill for search field headings and fields and mirror the color scheme of the site’s banner logo, which contains a portrait of Thomas Jefferson against the Capitol building and the catch phrase “Legislative Information on the Internet.” The white boxes in which the researcher must type search terms thus capture the foreground and focus the reader on creating the search query. These pages are admirably designed to lead the user forward by keeping visual information simple and providing visual cues for executing a search, all of which keeps obvious what the user will find important and makes navigation easy.

¶63 Some of these attributes are lost when a researcher gets to the search results screen. Information is not always presented in easy-to-process “chunks” but rather may be delivered in a continuous stream of dense text with too little white space. The most obvious problem is that some searches result in document lists with no line spaces between the items. They are numbered, but that is less effective as a visual separation than space would be. Fortunately, this problem does not persist throughout, as the Library of Congress improved the visual literacy of the Thomas site when it revamped the interface in 2005, at the start of the 109th Congress. Whether a user’s search results in a hard-to-read stream of text or easy-to-read chunks depends on the materials being searched.

¶64 Other visual improvements can still be made. Many document pages tend to be awkward, lacking the regularity that results from conscious decisions regard-

57. See *supra* note 27.

58. See *supra* note 29 and accompanying text.

59. Serifs are the “flags” at the tips of letter and number characters in a font such as Times New Roman, the Microsoft Word default. The most popular sans serif font is Arial. See, e.g., GILLANI, *supra* note 6, at 156. The goal of various typeface designs, at least in serious research materials, is to make text more readable by making characters instantly apparent. Burch, *supra* note 43, at 362. LexisNexis, Westlaw, and Findlaw consistently use the same sans serif font for virtually all parts of their sites. GPO Access uses primarily a single sans serif font, but switches to a uniform serif font in the document pages, including some of the accompanying search and browse screens.

ing layout. They have an amateurish look about them, as if designed for browser software many generations old, or converted to HTML from an electronic file without having been “cleaned up.”⁶⁰ Both or either of these may be true, and I make no judgment on the Library of Congress’s allocation of resources regarding the results and document pages. Nevertheless, as a matter of visual literacy, this aspect of Thomas falls below the standard set by its own initial screens. Another example is the search results grid for certain materials, including congressional committee reports and *Congressional Record* entries, which lists documents in all uppercase letters, an elementary typographical taboo.⁶¹

¶65 Still, despite the eyestrain that Thomas may cause among heavy users of its full-text documents, Thomas streamlines the finding process with its visual design, which is unified, transparent, and orderly. Like GPO Access, research moves in just one direction, so it is not as powerful as LexisNexis or Westlaw, which offer multiple directions yet trace the paths for easy turns and reversals, but at least it does not let the user get lost like Findlaw. Thomas also is among the best of research sites in getting the user back to the home page from almost any part of the map: wherever the banner logo appears, a click on it will send the user back to thomas.loc.gov, and if it does not appear, a text link saying “HomePage” above or below the document will allow the same.

New York State Assembly

¶66 Because Thomas is such a widely used legal research site, I thought it would be valuable to compare it to a couple of state legislative sites. My first choice of the New York State Assembly’s site (www.assembly.state.ny.us) is admittedly biased, as I live and teach in New York and have explored the site at length with several classes of my advanced legal research course. My second choice, that of the California Assembly, is based on the prominence of California’s government in the news recently. It is also one house of an active legislature in a highly populated state, and its Web site is undoubtedly heavily used by serious researchers.

¶67 The New York State Assembly’s home page features a photograph of the Assembly Speaker next to his message and signature. Most of the site’s pages consist of three columns, a left-hand, dark blue frame offering choices of information available on the site; a middle, white area displaying the requested information (or in the case of the home page, the Speaker’s face and message); and a right-hand, gray or yellow area providing in-depth choices or further information regarding the information displayed in the center. The stress created by the deep background color of the left-hand column assists serious researchers by sharpening its perception; this is indeed where most people will want to begin. Unfortunately, this

60. I have tried to refrain from commenting on this throughout the article—for example, not discussing the many PDF documents found on the GPO Access site—because my intention is to look at the site’s construction rather than the content of its documents.

61. See, e.g., GILLANI, *supra* note 6, at 159; MOORE & DWYER, *supra* note 1, at 178.

sharpened focus is cancelled out to some extent in its utility to the user because the white lettering identifying the links appears overly bright in contrast to the dark blue and the links are hard to read.⁶² Nevertheless, they are helpfully separated by light blue lines and offer the most substantive information, such as Bill Search and Hearing Calendar, toward the top. A Quick Bill Search box requires scrolling, though it is a nice feature for the home page.

¶68 Internal pages maintain the consistent design: Assembly logo with state seal in a dark blue horizontal box at the top; column in dark blue down the left side containing the framed links; and a narrow orange band across the top, separating these two blue sections and showing today's date.⁶³ A disadvantage to this consistency is that the left-hand column is quite long while the information in the white box to its right, the content page for the chosen link, rarely extends as far down. This results in large empty white spaces as one scrolls, making the information appear sparse and unimportant. Another design shortcoming is in the search screens, which although quite straightforward in appearance—plain black explanatory text, standard white fields for entering search terms—are problematic because the information and design for the search query screen remains the same after the search has been executed and the results displayed. At first glance, one may think the search failed to execute: the search query remains at the central axis point in the visual field while the search results start well below the search query box, often not visible at all unless one scrolls. A noteworthy plus, however, is that information is always framed in the same size space. If a third column needs to be added to provide links or information to support use of the “active” box in the middle, it appears as background to that active box by its presentation in, usually, a light, bluish gray, unoutlined fill that appears simply to occupy some of the middle box's space. These pages maintain a clever balance. They are not symmetrical; rather, they emphasize the left but suggest movement to the right. The sharpened dark blue column frame on the left reminds the user of all search possibilities, then invites the user to move on to the stable and clear white space and instructions in the larger, middle frame to execute a search or review results or other information. If additional choices are available, the active frame invites the user to move on to the background possibilities.

¶69 Documents viewed from the search results list dispense with the left-hand column of links but maintain the top blue and orange banners. Most documents are in plain Times Roman or Courier text, differentiating them from the Web site navigation and information text, which is all sans serif. Research is limited to Assembly materials exclusively, so links rarely lead off the site. Within each section of the site, information is limited in scope and numbers of documents. It is

62. This perceptual phenomenon is akin to turning a television's brightness control up too high. See DONDIS, *supra* note 3, at 51–55. The colors create agitation rather than repose.

63. Dark blue and orange are the colors of the New York State flag. N.Y. STATE LAW § 70 (McKinney 2003).

virtually impossible to lose track of one's research trail, which I attribute more to this aspect of the site's content rather than conscious design. Still, the designers deserve credit for including both **Back** and **Assembly Home** links at the top of most search query and search results pages, easily noticed in a light-blue shaded box surrounded by ample white space.

¶70 Pages within the site less likely to be used in substantive legal research, such as individual assembly members' pages and the press releases under "What's New," are much flashier in their use of too many colors or too many fonts. This is also true of individuals' Web sites and press releases on many federal government sites. The New York State Assembly clearly has imposed some uniform design guidelines on individual members' materials in maintaining their pages but has opted for a less conservative look for this information.

¶71 Examination of both Thomas and the New York Assembly Web site encourages me to conclude that free legislative information can be worth pursuing as an initial research step, at least in some jurisdictions. Both sites are designed simply to maximize either a first-time or a repeat visitor's ability to find documents. The most elementary visual literacy principles are followed: sharpening to focus attention on the best choices in the research path, and leveling to allow easy interpretation of text on the page.

California State Assembly

¶72 The California State Assembly site (www.assembly.ca.gov) looks remarkably different from that of New York's Assembly. Its main frame floats freely, unoutlined, an unusual design among legal Web sites, most of which employ boxes that are "sturdy and straightforward"⁶⁴ squares or are rectangles, their "more sophisticated cousins."⁶⁵ The background fill of assembly.ca.gov is textured, also unusual, and its marbled blue color, although in the traditional family for background colors,⁶⁶ is a shade of turquoise rather than a sky or medium blue. Because texture connotes depth, designers utilize it most frequently to represent three dimensions in a two-dimensional world.⁶⁷ Its role on the California State Assembly site is not immediately apparent, since the information conveyed is text rather than images from real life. Other, differently textured backgrounds appear on several internal search pages as well. Perhaps the idea is metaphorical, an expression of the assembly's tangible presence in the lives of California residents, or of its active role. For the serious researcher, what matters more is contrast: the text on the home page, bolded green for headings and bolded dark blue for the main links in this area, stands out dramatically against the pale, textured turquoise and so effectively draws the reader's attention. Search links

64. LESTER, *supra* note 5, at 33.

65. *Id.*

66. *See supra* text accompanying notes 41 and 49.

67. *See* MESSARIS, *supra* note 5, at 51–52.

in a vertical frame to the left are in the same shade of dark blue, but rest on rectangular fields of yellow.⁶⁸

¶73 This left-hand frame adds what first appears to be background fill but on deeper inspection reveals itself to be unoutlined, yellow rectangular boxes around each link. The turquoise background is behind these boxes, appearing as thin lines to separate the boxes. The design's intent is probably to keep the entire screen unified and to make the left frame appear to be within the right frame. The Gestalt principle of continuity, in theory, should make us see the marbled turquoise lines on the left as continuous with the background fill on the right (and also above, as the left-hand frame's top edge starts a couple of inches down the screen). It doesn't quite work, primarily because the scroll bar between the two frames is too wide and cuts off the perception of the fill as continuous. Proximity trumps continuity. Even worse, the more one looks at the page, the more one perceives the Gestalt principle of similarity to be violated because there is not enough contrast between the yellowish tone and the bluish tone. They begin to overlap, confusing the eye. This means that users, particularly those who do not visit the site with any regularity, will experience increased rather than decreased distraction as they browse the home page to figure out where to proceed with their research.

¶74 The principle that saves this home page is that of common fate: the text is so clearly divided into three sections—left-frame links, upper right-frame links, and lower right-frame links—that the user does not really have to struggle to figure out what to click. The intellectual content of these three sections makes sense: the left-hand links concern research of a permanent nature, including legislation, committee information, and caucus information. The top right-hand links are, as their heading says, "Announcements" of a timely nature, such as today's calendar and information on how to comment on a pending bill. The bottom right-hand links, which are in roman rather than bold type, are miscellany, none related to the others.

¶75 The biggest hurdle to research is not the subtle pattern confusion just described but rather the imprudent use of graphical icons, which seem strewn about randomly and destroy the scale of the pages on which they appear. Most are larger than the text they accompany and include bright colors, or worse, lines or shapes connoting movement, making the images highly accented⁶⁹ and thus the most noticeable items on their pages. The researcher momentarily focuses first on the image and needs to evaluate whether it is a link, and if so, if it is an important research link. On most pages, for most people, these images will not be. The typical legal researcher, especially one who does not visit the site often, will

68. Though easy to perceive and interpret, these design elements also strike me as encouraging the user's attention to be diverted from research to daydream: the pebbled turquoise background and yellow fill in the left-hand frame visually reference the beach. This is, admittedly, an appropriate image for the state, though perhaps not quite for its seat of government in Sacramento.

69. See DONDIS, *supra* note 3, at 119–120.

need a couple of seconds to scan the rest of the page to find the real research links, which, like much on the site, float too freely, diffusing their appearance. Unlike the items in the left frame, there tends to be nothing in the main frame to establish a pattern.

¶76 Basic layout of internal Web pages is somewhat, but not completely, consistent. For example, the colors and concept of the two frames remain the same, but the placement of the left frame changes, moving up and down depending on whether there is any graphic above it. If not, the frame moves almost to the top of the screen, with only a thin layer of turquoise fill behind it. If a graphic is added, usually a large image of the assembly seal, the frame moves down slightly from its position on the home page. This image of the seal is a bigger version of what appears in a much smaller version on the home page at the top center in a banner logo for the assembly. Its increased size is startling on the pages in which it appears. Because it is in the upper left, it slows down scanning, keeping the viewer focused on that part of the screen.

¶77 Internal pages also detract from the research experience by constantly changing colors of both text and background fill. The fill texture even changes on some pages, including the Bill Index. **Find My District** opens a viewer window, superimposed on the main window. The variations are subtle but nevertheless require a visual adjustment with every click. The intellectual train of thought is not mimicked in the design, a more serious problem. The **Legislation** link leads to the same page as the **Comment on an Assembly Bill** link, which is visually confusing. One can find bills on this page, including text, history, and status, but that is not immediately apparent. In addition, there are no visible instructions on how to search or information on what format the bills are in, nor any indication that status information is available.

¶78 For all these design faults, the California State Assembly site is still fairly easy to use because, like the New York State Assembly site, its substantive information is limited enough in scope that a user cannot get seriously lost. The site architecture is simple as well: there is a helpful warning every time a link is about to lead the user off the assembly Web site and onto another host, and a link to return to the home page is added at the top of most internal pages. Ultimately, however, it illustrates how differently Web designers can present the same kind of information: California's site takes more mental adjustment than New York's. It is arguably prettier and certainly less dull, but probably takes more time to navigate.

Print Resources

¶79 All researchers, whether novice or advanced, notice a major difference in their research experiences when they move from an electronic to a print environment. Many sophisticated functions in the former are lost in the latter, but some of the visual elements that distinguish print resources from their electronic counterparts are lost when a researcher moves in the opposite direction. Most of these elements

are underappreciated by researchers focused on the power of online searching and speed of linking.

¶80 The two most important of these are the typographical and organizational conventions that print publishers have developed to signpost the research path. Print materials are capable of providing only a limited number of navigation cues, but these cues are tremendously helpful to researchers. The few visual signals available in paper format in a field that is almost entirely text-based are exploited to maximum benefit in tools such as West digests, A.L.R., and legal encyclopedias. Headings and subheadings, bolding and italicization, and line spacing and indentation are used in all three of these types of sources to signal hierarchies within the materials, often topical but sometimes concerning court structure or statutory schemes; citations for cases, statutes, and other materials; and critical information such as jurisdiction or date. Printing the jurisdiction of a case or statute in a bold-face heading before the full citation, a convention used in all three of these types of research tools, is especially helpful in enabling the researcher to quickly weed out authorities that are not controlling or otherwise pertinent to the research. In the current electronic equivalents to or substitutes for case digests, A.L.R., and encyclopedias, the bolding of the jurisdiction has been lost, but hyperlinks to the full text of the cases or statutes cited have been added. Does this make research more or less efficient, more or less thorough? Does the loss of one visual signal cancel out the gain of the other? The answer will differ from researcher to researcher and may explain in part why, for example, some people continue to prefer using A.L.R. and encyclopedias in print form over their LexisNexis and Westlaw versions. In general, the more frequently one conducts research, the more efficient and thorough one can be online. For the less frequent user, however, the loss of those print visual cues will probably cause a slowdown in evaluation of search results that is exacerbated by the momentary but constant hesitation caused by the design hurdles on LexisNexis and Westlaw.

¶81 Typography plays an enormous role in annotated statutory codes. The different point sizes of text used for providing the wording of amendments, the bolding of headings in the outline for notes of decisions, and the organization and presentation of those decisional notes in discrete paragraphs under their topical headings and arranged by level of court and date, all provide useful information to a user just flipping the pages without reading the full content. Most print materials convey useful information simply by how the information appears on the page, such as whether a front-page newspaper article starts above or below the fold and how large the headline is, not to mention the editorial selection at work in choice of the piece for the front page and in the total length of the article.⁷⁰ This information “warrant” (or validation) is more easily achieved in formats for which there are standardized norms; thus, both users and providers of digital information face

70. BROWN & DUGUID, *supra* note 8, at 185–87.

significant challenges to achieve similar contextual validation.⁷¹ Online versions of statutory codes reproduce all the substantive content of their print counterparts but alter some of the typography, removing some of the context (such as the reduction in size of amendment notes and the bolding of headings for decisional notes) and thereby some of the validation. For example, someone browsing an annotated statutory code in book form may see that one case-note heading goes on for pages while the next case-note heading has only one case squib. By simply scanning, the browser can draw some conclusions about which aspect of the law is heavily litigated and which aspect isn't. This information can be determined online as well, but not on a visual scan, only with a close reading.

¶82 Organizational conventions such as indexes, tables of cases, and section and paragraph numbering systems provide a readily understood architecture to the entire set of books for a given research tool. LexisNexis and Westlaw have maintained section and paragraph numbering in their online treatises and have added many tables of contents, indexes, and tables of authorities to numerous sources and documents in their databases. Indeed, Westlaw's enhancement of its statute databases with StatutesPlus was a move in the direction of mirroring book research more closely rather than less. The StatutesPlus features include reorganizing and reformatting the information into a greater number of groupings so that items like the notes of decisions and text of amendments can be viewed separately. Although bolding is used much less liberally than in the book counterpart, better use of spacing and indentation make the information easier to interpret simply by its layout.

¶83 One final thought regarding the visual attributes of print resources is about their overall form. Books are seen in three dimensions, and once printed, do not change. That is validation in and of itself: they are real and they are permanent. Updating is hard but signaling reliability is easy. Internally, their pages are viewed in twos: the reader's perception creates a unified field of opposite leaves in an open volume. To move to the next visual field, the reader must physically turn the right-hand leaf. This physical connection to the material provides both context and efficiency: we can judge length, and sometimes organization, based simply on a visual check of the heft of a section. Not so with long electronic documents, through which we must scroll. Scrolling is a step backward, historically, from the codex form in which we read bound books.⁷² Ironically, PDF versions of documents, which reproduce print page images, are often considered even more frustrating by researchers, as they are often used, especially on government Web sites, for longer documents, thus increasing the need to keep scrolling. In addition, they tend to be less navigable than HTML documents on the Web, thus losing both the benefit of being online and that of being a real, three-dimensional page.

71. *Id.* at 187–89, 201–203; accord John Eighmey & Lola McCord, *Adding Value in the Information Age: Uses and Gratifications of Sites on the World Wide Web*, 41 J. BUS. RES. 187, 193 (1998).

72. BROWN & DUGUID, *supra* note 8, at 278.

¶84 The final message for researchers is that although frequent users of online legal information will learn to overcome visual drawbacks and will work efficiently, casual or beginning users will be hindered by designs that fail to match their perceptual needs and expectations. Although helped by patterns or cues made possible only in the electronic environment, these new users may lose as much as they gain. Law students especially, but also practicing lawyers who, unlike reference librarians, do not spend parts of every day performing research, should not assume that Web-based research is faster than book-based research. The process of evaluating the information we find is sometimes more efficient in the simpler, more stable, more predictable, and less ambiguous visual realm of print.

Conclusion

¶85 All Web site designers are challenged by the need to “maximize Web site coherence [yet] minimize users’ cognitive overload.”⁷³ The hypertext environment can be dizzyingly complex because it is nonlinear. It can hinder the process of research by disorienting the user, causing confusion of both location and direction.⁷⁴ The best design for information-seeking behavior seems to be the happy medium: one that utilizes the relationships available in hypertext without straying too far from analogies to the real, three-dimensional world of print. As long as the researcher can keep track simultaneously of both the overall organization of the materials and the specific content on a given page, the site has succeeded in supporting the researcher’s goals.⁷⁵ Designers of the two major online legal information systems have achieved this outcome for the most part, but they have left room for improvement, especially in failing to address how to assist novice and occasional researchers evaluate some of the search results and decide, based on that evaluation, what the next step should be in the research process. Government sites vary in their ability to guide the researcher visually, but fortunately tend to offer materials that are limited enough in scope that ambiguities in design are fairly easily sorted out. At least one of the most heavily used commercial legal portals has done a rather poor job at supporting the researcher’s goals. But change is a given on the Web, and although change itself is disruptive to researchers, destroying predictability from one visual experience to the next, it may be the user’s best friend over time, as electronic resources experiment with providing the kinds of consistent visual signals and validations that we take for granted in the print environment. Perhaps, in just a few years, the final message for all researchers will be that Web-based legal resources are, uniformly, the most visually literate tools available.

73. Byeong-Min Yu & Seak-Zoon Roh, *The Effects of Menu Design on Information-Seeking Performance and User’s Attitude on the World Wide Web*, 53 J. AM. SOC’Y FOR INFO. SCI. & TECH. 923, 923 (2002).

74. *Id.* at 923–24.

75. *Id.* at 926–27.