Chapter 4

The Relationship of Legal Tools and the Legal Structure

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The Boulder Statements[1] call for "legal research education" that "teaches the resolution of legal problems through an iterative and analytical process." Rather than purely esoteric aspirations, the statements include the concept of using "practical apprenticeship" as a vehicle to help students develop the ability to identify and define "legal issues and problems."[2] Because there is no way to prepare rote approaches for every legal problem an attorney may encounter, the Boulder Statements also include the use of "a cognitive apprenticeship" to develop intellectual scaffolding to master the "legal system," or context, within which a "question arises." This thoughtful structure extends into the realm of the sources of law as well as the tools used to discover, access, and apply those sources.

This chapter addresses the relationship of legal tools to the legal structure. The release of second-generation electronic research systems such as WestlawNext and LexisAdvance demonstrated that simplifying search interfaces can actually make it more difficult for students to understand basic concepts of legal research such as what sources are searched, why they are appropriate to search, how result sets are formulated, and ultimately how those results relate to the problem being researched. As more intelligence is built into the search engine, there is an increasing chance that researchers will lose understanding of

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[1] BOULDER STATEMENT ON LEGAL RESEARCH EDUCATION, Appendix A, *infra* p. 255; BOULDER STATEMENT ON LEGAL RESEARCH EDUCATION: SIGNATURE PEDAGOGY, Appendix B, *infra* p. 261, and the BOULDER STATEMENT ON LEGAL RESEARCH EDUCATION: COACH TEMPLATE, Appendix C, *infra* p. 267 ["Boulder Statements"].

[2] *Id.*

how the tool is mediating the source material being used. Many decisions made by the new search interfaces are not transparent.

When the tool mediates well, the user does not even consider how the tool extends ability or alters perception. In an environment when the result of the mediation is obvious, there is little risk of unintended consequences. Historically, the tools used to search legal resources used stable elements, indexes, table of contents, and digests that bore some cognitive symmetry to the task the lawyer performed. Besides being arranged by a controlled vocabulary of legal principles, they were also organized by geographic and hierarchical jurisdiction. Instructors could anchor their teaching on an intellectual foundation that was similar to the way courts and state and local governments were organized.

As legal research tools imitate popular generic search engines and e-commerce sites, there is a risk that the tools will bear less resemblance to the traditional legal system they have been designed to elucidate. The intellectual distance created by the strength of the interface not only makes it more difficult to teach the tools in an integrated way, but more importantly, it has the potential to limit students' understanding of where the problem they are attempting to solve fits into the larger context of legal research.[3] Since the relationship between the tools and the legal structure is no longer straightforward, applying the Boulder Statements to the challenge of increasingly sophisticated search tools is the best way to help students understand the relationship between the tools they use and the problems they must solve.

Mediation by Tool

Before diving any deeper into theory, it may be helpful to illustrate an example of how a tool mediates the environment in which it is used. Tools mediate in different ways, but most tools have greater impact as the user develops skill in application. Consider the following example. As my daughter decides she wants to play softball, I become her first

[3] As Barbara Bintliff explained, "Effective legal research starts within a sophisticated context of background information and knowledge." She also identified the challenge inherent with digitally based tools, "Electronic research provides a shifting context for our problems. When there is no framework within which to conduct research, each researcher is likely to find and select a different set of results." *Context and Legal Research*, 99 LAW LIBR. J. 249, 258, 262 (2007).

teacher/coach.[4] Though she can throw, a skill transferred from fighting with older brothers, catching is more difficult, especially because the softball is really anything but soft. The tool invented to mitigate the impact of an oncoming ball is a softball glove. As we head out to the back yard and each put on our gloves, differences in our approaches become very apparent. I am comfortable with the tool's mediation of both physical and cognitive environments. I quickly slide the glove on; using a technique my mother taught me to wiggle my fingers up each finger of the glove.

My daughter first struggles with the awkwardness of a glove that really doesn't fit that well. It is hard for her to push her fingers up each compartment in the glove. I demonstrate the wiggle technique; she is unimpressed. Clearly the glove feels heavy to her arm as she flops the glove to her side. She does not immediately understand that she should hold the glove up in preparation for receiving the ball. Instead, nothing is instinctive because the interface of glove and the mediation of her environment is foreign to her.

As I give her instructions, it is difficult for her to imagine what I am asking her to do. "Hold the glove up to give me a target" results in a cute, but clearly puzzled expression. I am using vocabulary she does not understand. As I try to model the behavior I want her to demonstrate, it dawns on me for the first time; I do not even notice the glove on my own hand. It has been in my possession for thirty-six years. When it is on my hand, I know instinctively where it ends (three inches past the ends of my fingers). I have great confidence that I can catch a ball traveling close to 70 miles per hour. I feel stronger, taller, and even a little faster with a softball glove on, but I do not have to think about it. In fact, I never think about it. It is a part of me physically and even mentally. I know intuitively that it will protect me from fast moving objects, so my body does not recoil in tension when a ball is coming at me because the glove will prevent injury. It literally changes the way I perceive balls thrown in the air or on the ground. If I take it off, the

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[4] I am not the first to use a bat and ball or coach analogy; *see* Amy Beckham Osborne, *Baseball and the Law: A Selected Annotated Bibliography, 1990–2004*, 97 LAW LIBR. J. 335 (2005); *see also* Kristin B. Gerdy, *Teacher, Coach, Cheerleader, and Judge: Promoting Learning through Learner-Centered Assessment,* 94 LAW LIBR. J. 59 (2002).

chances of me catching a ball thrown at me decreases along with my confidence that I can do so.

Turning back to my daughter, I realize that she is still trying to understand why she can't just catch the ball with her hand. The behavior has always seemed to serve her well up to this point. The glove seems like it slows her down. Why does she need the tool? It is hard to explain to her how it helps when its newness gets in the way. As we toss the ball back and forth, the ball often hits her glove and then falls to the ground. Sometimes she closes the glove before the ball arrives and it bounces off the glove onto the ground. Sometimes the ball lands right in the pocket of the glove with a successful pop, and then she excitedly lifts her hand high into the air above her head to look for the ball, only to have the ball fall out of her glove to the ground. After the first fifteen minutes of practice, she rightly wonders if I know what I am doing.

After questioning her teacher, the next instinct is to blame the tool. Since my glove seems to work so much better, she asks to try my glove. It is too big for her and distracts her even more. Dutifully she puts her glove back on and I concentrate even harder on simple, soft throws, which land perfectly in her glove. She starts to forget that there is a hunk of leather on her hand and starts adjusting her arm position to compensate for some less than perfect throws. Based on her request the next day to play catch again, she has gotten past the awkwardness of the tool, overcome any resentment of practice, and is developing the confidence she needs to enjoy the game. Though she does not recognize it yet, she is learning how to apply tools to help her solve problems.

Legal Tools Increase Capacity

Focus on legal research tools as indispensable aspects of the practice of law is not new. In 1924, the author of *Law Books and Their Use* explained:

> Lest the lawyer or student should regard a knowledge of law books as an elegant rather than a necessary accomplishment, let it be here premised that he cannot safely advise a client, brief a case, or argue a point of law, without knowing how and where to obtain information which is both accurate and adequate. He must know how to make an exhaustive search for authorities, lest his opponent confront him with decisions of which he has no foreknowledge.

> .... Hence he should have a knowledge of the books which will form his working equipment, and how to use them most effectively....
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> Law is what the courts have declared it to be. In a broad sense that is the definition of the law of this country. The courts have stated the law in their decisions. These decisions are printed and bound in books. All other law books are built around and on the decisions. Therefore, to learn what the law is, one must find it in the books.[5]

In the 21st century, there is some nostalgia for the luxury of assuming that "the law" is neatly found "in the books."[6] Daily it seems that there is new software, hardware, and services that challenge those who enjoy their mastery of sources and search methods. Each new tool seems to include the risk that old skills have become obsolete. Yet the need to master those tools remains a basic competency of lawyers, because the body of authority that is critical to solving legal problems is difficult to approach without some type of assistive mediation.

Again, this problem is not new. In 1924, just a year after the ABA began formally approving law schools,[7] the strategy to keep up with a growing body of authority was to use search tools:

> It is impossible for anyone to know the law.... Discouraging though the reflection may be, it is nevertheless true that none of us, even the most learned can safely rely on his recollection for the law.

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[5] LAW BOOKS AND THEIR USE: A MANUAL FOR LAWYERS AND STUDENTS WITH A CHAPTER ON BRIEF-MAKING 5 (Lawyers Co-Operative Pub. Co., 2d ed. 1924).

[6] *See*, Robert C. Berring, *Legal Research and Legal Concepts: Where Form Molds Substance*, 75 CALIF. L. REV. 15 (1987); *Full-Text Databases and Legal Research: Backing into the Future*, 1 HIGH TECH. L.J. 27, 31–33 (1986); *Collapse of the Structure of the Research Universe*, 69 WASH. L. REV. 9 (1994); *Legal Information and the Search for Cognitive Authority*, 88 CALIF. L. REV. 1673 (2000); and finally, *The End of Scholarly Bibliography: Reconceptualizing Law Librarianship*, 104 LAW LIBR J. 69, 75 (2012) (acknowledging the final demise of the book-based world, "There is no point in lamenting this development. The battle is over and mediation of information by librarians lost."; but is it? What if books were just knowledge tools that we mediated to our users? If our goal is to get users to the best source, regardless of on- or offline, librarians still mediate information).

[7] *See* ROBERT BOCKING STEVENS, LAW SCHOOL: LEGAL EDUCATION IN AMERICA FROM THE 1850S TO THE 1980s 172–173 (1983).

> What we have learned to be the law -yesterday may not be the law of to-day. A decision of a supreme court may have worked far-reaching changes; and (like the law student who excused his ignorance on questions put to him by the bar examiners by saying that he had specialized on the statutes) we run the risk of having what we know repealed at the next session of the legislature. The most that we can hope to do is to acquire a grasp of the principles which we must apply, and some foreknowledge of the questions with which we may have to deal and of the mechanical methods by which we may discover the governing law.[8]

The strategy of applying specialized resources to keep up with a growing and complex field of knowledge is still a sound approach. In fact, many educational psychologists have argued that real intelligence can only be measured when we interact with our environment, including our ability to leverage tools to extend our cognitive skills.[9] When intelligence is considered to include the elements of the material world that we structure to help us remember and understand, including the tools such as books or databases to which we have access, the value of cognitive tools is enhanced. As Andy Clark argued:

> We use intelligence to structure our environment so that we can succeed with *less* intelligence. Our brains make the world smart so we can be dumb in peace! Or to look at it another way, it is the human brain *plus* these chunks of external scaffolding that finally constitutes the smart, rational inference engine we call mind. Looked at that way, we *are* smart after all, but our boundaries extend further out into the world than we might have initially supposed.[10]

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[8] LAW BOOKS, *supra* note 5, at 6.

[9] Ashley E. Maynard, Kaveri Subrahmanyam & Patricia M. Greenfield, *Technology and the Development of Intelligence: From the Loom to the Computer,* in INTELLIGENCE AND TECHNOLOGY: THE IMPACT OF TOOLS ON THE NATURE AND DEVELOPMENT OF HUMAN ABILITIES, (STERNBERG, R. J., & PREISS, D. eds., 2005). ("The nature of a culture's tools at a particular time influences that culture's operational definition of intelligence. That is, the cognitive skills required to develop and utilize a culture's tool set become an important component of a group's implicit definition of intelligence." *Id.* at 29.)

[10] ANDY CLARK, BEING THERE: PUTTING BRAIN, BODY, AND WORLD TOGETHER AGAIN 180 (1997).

Viewing the entire environment that we work in as part of our intelligence helps us understand why legal tools continue to play such a large role in the practice of law. At least since the end of the 19th century, legal tools have had the potential to make lawyers smarter than they would be without them.

What has changed over the last century is a deeper awareness of just how integrated our technology can become with our thought process. Additionally emerging models of how the brain develops add to the importance of examining what tasks the tools encourage and which they discourage. The concept of neural plasticity, the idea that our brains can be reshaped based on stimuli they are exposed to, also highlights the extent to which our minds can be transformed, both for good and for ill, by the cognitive tools that we repeatedly use.[11]

Gavriel Salomon and David Perkins have proposed three primary effects of cognitive tool use, the *effects with* technology, the *effects of* technology, and the *effects through* technology.[12] The *effects with* are what we traditionally consider when we think about what happens to us when we use a specific tool. For instance, the *effects with* using Shepard's or Keycite is that we are able to see the procedural disposition of a case we are examining with much better detail and much less effort than if we did not use a citator. Using a citator makes us aware of the current procedural state of a case faster than if we attempted to update the case on our own.

The *effects of* using the citator may be less apparent. On the bright side, after using citators over a period of time, we may develop the

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[11] NICHOLAS G. CARR, THE SHALLOWS: WHAT THE INTERNET IS DOING TO OUR BRAINS 26–27 (2010) ("The adult brain, it turns out, is not just plastic but … very plastic … The brain is not the machine we once thought it to be. Though different regions are associated with different mental functions, the cellular components do not form permanent structures or play rigid roles. They're flexible. They change with experience, circumstance, and need." "Our brains are constantly changing in response to our experiences and our behavior, reworking their circuitry with 'each sensory input, motor act, association, reward signal, action plan, or [shift of] awareness.' It's not just repeated physical actions that can rewire our brains. Purely mental activity can also alter our neural circuitry, sometimes in far-reaching ways." *Id.* at 31–32 (citations omitted)).

[12] Gavriel Salomon & David Perkins, *Do Technologies Make Us Smarter? Intellectual Amplification With, Of, and Through Technology*, in STERNBERG, *supra* note 9, at 7782.

mental inclination of skepticism towards the authority of any case law we are presented with, at least until we can confirm its status in a citator. We may get in the habit of never citing any authority without Shepardizing or Keyciting first. On the dark side, we might lose the ability to understand the reason why a case was overturned or distinguished because we might delegate the work of our analysis to the editors that produce the citator. This can illustrate some very important issues of shifting cognitive control over research from inside our brain to outside. The more research interfaces attempt to assist cognition, the greater the chance that the software will make assumptions and decisions that an unmediated user would not. For instance, where an opinion reverses only a portion of a ruling, or reverses based on a different doctrinal principal, the simple red flag or stop sign may persuade a rushed researcher to ignore an opinion that may have real value.

The *effects through* technology point to the fundamental changes that happen, often inadvertently, when a technology enters a specific domain. The changes are in large part just combined results of the *effects of* technology. In our example, the difference of how law was verified ten years before Frank Shepard started his service, when the only way to determine the status of cases was to read them—all of them, as compared to the way it was verified ten years after the introduction of Shepard's citator, where a researcher could just navigate to a table listing the citing cases. The tool led to a major shift in the way law was practiced, even making the use of Shepard's citations a verb: Shepardizing.[13] Arguably, attorneys' ability to decide whether a case was overturned, or to what extent it influenced prior cases, was probably diminished as an effective tool was developed to relieve attorneys of this cognitive load. In fact, it was a reasonable defense, when an attorney had failed to note a case criticizing or overruling one of their cited cases, to explain that the researcher had Shepardized it before submission. It was reasonable to rely on Shepard's.

While debate over the *effect of* technology on society as a whole is interesting, the important thing to remember is that students must be

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[13] *See* Berring, *Legal Information and the Search for Cognitive Authority*, *supra* note 6. ("Shepard's products became icons of authority. A competent researcher had to '"Shepardize"' his research results." *Id.* at 1695.)

taught to recognize these effects, because the natural human tendency is to ignore them and just enjoy the *effects with* technology. After I put my glasses on in the morning, I rarely consider how they transform the world around me.

Accepting that tools can change us, and our profession, and that our dependence on them can make change more painful, it is import to teach students to identify what about our tools keeps changing. Not surprisingly, identifying areas of frequent change helps researchers develop the ability to identify how changes ultimately affect their ability to relate to the legal structure. For instance, the change in delivery format is the easiest variable to focus on because describing the difference between using a book and an online source has many simple points of comparison. Yet, the clarity of the differences can obscure the fact that in both cases, most users are still using text-based tools. "Text-based" is used here instead of print-based because librarians, for better or for worse, have used the distinction between print and non-print sources for decades.

Fundamentally, a source that one reads to develop meaning uses text to convey its message, whether it is found on a printed page, or on a monitor of any size. Whether read out of a bound book in a library or read on an iPhone in a court room, the lowest common denominator is typically the ability to read text. The traditional distinction between print and non-print, where electronic resources are delivered through computer screens, turns out to be a distinction with less difference that it would first appear. The sources still have to be read, and in many cases, easy printing allows users to produce printed pages for their reading activities.[14] That may change some time in the future,[15] but in the second decade of the 21st century, text-based literacy represents the primary human/machine interface for legal research tools. So in this example at the most basic level, only the interface we use to read text

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[14] In WestlawNext and LexisAdvance, initial designs did not include the ability to print, but both supported the option to download or email source text. After user feedback printing was facilitated in both products.

[15] For a call for expressing and understanding law in a more visual context *see* RICHARD K SHERWIN, *Visualizing law in the age of the digital baroque: arabesques and entanglements* (2011). (Sherwin concludes, "When law lives as an image on the screen that aspiration makes it incumbent upon all of us—jurist and lay people alike—to discern with great care whether the images we see are capable of bringing justice to mind." *Id.* at 192.)

changes between print and non-print sources. In both old interface and new, reading is still the fundamental skill.

Tool Change

The rapidity with which tools change is also an easily observed difference between books and the modern palate of *research tools*, and this difference has much more impact on the tools' ultimate influence on all of us. There are two factors that make the speed of change most vexing. The first is that modern marketing practices often raise the speed limit. Though librarians discussed the implication of moving from an ownership model of information to an access based model of collection development in the early 1990s,[16] few realized just how much marketing and advertising would be built into the online research tools we ultimately only rent. To be fair, some book-based legal research tools had page length advertisements for other books that a library or practitioner could purchase. But few, if any, imagined that research tools could be designed to increase the revenue of other research tools in a publishing family. One unintended consequence of the redesigns of Westlaw and LexisNexis is that both vendors marketing strategies demonstrate a desire to expose practitioners to as many resources as possible, as opposed to only those sources they need to solve a particular problem. Exposure has the added benefit of maximizing the potential revenue that comes through the online click-through process, the standard approach of most online vendors. Every use of the online tool comes with a certain amount of advertising built into the delivery method of the tool. This is a distinction between old book formats and the online world in which we now live.

The second factor that affects the speed of new tool development is electronic resource ability to track user behavior. In one way this is also tied to marketing. If vendors see a majority of users failing to exploit an aspect of a tool, they can replace that function with another better

[16] It is hard to remember that the first debates of access versus ownership surrounded strategies to maximize collection development budgets through strategic use of Interlibrary Loan and Document Delivery; *see* Anthony W. Ferguson & Kathleen Kehoe, *Access vs. Ownership: What Is Most Cost Effective in the Sciences,* 19 J. LIBR. ADMIN. 89 (1994). Those models had the luxury of not worrying about the disappearance of the object because they were used as consumables, photocopies of originals that remained in the loaning, owning library.

suited to advantage another source of revenue. Anyone involved in web page use studies knows that user data makes decisions about design changes easier since you can track how changes actually worked. It is likely that if the *American Digest* system had been developed first in a web environment, its categories would have been pushed to change much faster, as real user data was compared to intelligent editorial design.

Clearly vendors see user behavior as a valuable new commodity, one that was much more difficulty to extract in a book-based environment. Unless a user decided to make marginal notes that could be personally identified, there was no practical way anyone could know which pages of a book had been used. Similarly, unless an attorney decided to leave the digest volume she consulted along with the case reporter volumes she used on the table after she was finished, no one would have any idea how an attorney found a particular authority. In the digital delivery model, the vendors can track behavior at an unprecedented level.[17] It is easy to analyze a sequence of click-throughs to evaluate a research path when a computer knows all the possible avenues of investigation and can calculate the deviation from predetermined statistically modeled expected behavior. When these paths are studied over time, it is possible to profile a user's behavior and fine tune the advertising to present attractive sources based on the type of research being done.

New Tools, New Challenges

It may seem counterintuitive that as search interfaces have become more powerful and their interfaces have attempted to become simpler, they have actually made it more difficult to teach legal research as an integral lawyering skill. As tools become more sophisticated, at least three concerns have developed. The first, as noted above, is the fact that since much of the cognitive process, those decisions made automatically by the design of the resource, is no longer visible to the researcher, he or she will have to struggle to understand how the search actually works.

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[17] *See* SIMSON GARFINKEL, DATABASE NATION: THE DEATH OF PRIVACY IN THE 21ST CENTURY 69–92 & 153–75 (2000).

For instance, one of the first tools to move beyond Boolean and simple natural language searching is Westlaw's ResultsPlus. It offers suggestions based on a proprietary formula that included relevant data from other users' search and click-through history, among other things. Since it functions as a referral service, it clearly uses elements of user behavior gleaned from other Westlaw users. How that is integrated with the terms that have been searched, and ultimately how it generated its lists of suggestions is almost impossible to discover. Why an ALR annotation or Am. Jur. reference is included in the ResultsPlus results is known only to the programmers who developed the system, not the researchers using the tool. This makes the traditional deconstruction of hit lists, explaining how various results appeared and why they are displayed in a particular order, practically impossible. An instructor can only describe in general terms how the result set is related to the users behavior.

The second concern, related to the first, is that as a tool becomes more complex it will become increasingly difficult to understand what is actually being searched. In the ResultsPlus example, knowing what is actually searched, all Westlaw databases, just secondary sources, all user behavior, or just expert behavior, becomes very difficult to determine by looking at the search results alone. Again, teaching how to best use the tool focuses on reacting to results, not creating results.

A third concern is raised by the difficulty of understanding why a vendor chooses to include a specific target as an aspect of their interface. This, of course, assumes that a researcher will still be able to determine which discrete sources are searched. As discussed below, interfaces appear to be driven as much by profit as utility. While major legal research vendors undoubtedly consult librarians and other expert researches, there are several factors that conflate the design of the tools to leverage user interaction beyond efficient searching.

The designers of tools are interested in generating revenue from use. That means even inefficient use can be valuable to the vendor. While the longevity of a product may be tied to the perception of its ability to help researchers, the first release of WestlawNext illustrated how not letting a user specify a specific source could be more valuable to the vendor than to the user. Faculty frequently complained that the basic search was too broad to locate materials they could easily find using the database identifier they had used for decades. The interface design assured the best search would we a search of the widest possible universe of data. That design achieved the vendor's goal of exposing its

content, without benefiting the searcher with a narrowly scoped search to efficiently retrieve a document.

This appears to follow other online search engines commodification of users' search behavior. The classic example of this is Google. While facially appearing as a public service to organize the internet, Google is, in fact, an advertising company. "The more Google sends traffic to sites with its ads, the more money it makes; the more money those sites make, the more content they can create for Google to organize."[18] Though legal information vendors target a smaller market than Google, they are no less driven by profit. Transparency in search tools, as far as the provider is concerned, is only important to the extent that there is market demand for it, in other words it results in greater profit. This introduces a new level of complexity when teaching search strategy. Not only must students be taught to ignore marketing based distractions such as irrelevant links, but they also must maintain a critical eye on how to best use the resource for their purposes, rather than simply accepting system defaults.

From a teacher's perspective, the new layer of marketing imbedded in digitally delivered tools is important because it increases the universe of possible mistakes that can be made during a research session. In a book-based instructional environment, it was relatively easy to figure out if a student (1) used the correct book index, (2) found the correct term in that index (3) and then found the source the index was referencing, usually a case reporter. The index had a fixed number of entries, and creative stemming exercises such as "What is another term for defamation?" provided relatively easy ways to explain, "The entry in the index refers to libel and slander." Keyword searching made that universe much more complicated because it expanded the number of poor search strategies that still produced results. Though some may argue that keyword search is sometimes very helpful, the problem remains that as an interface makes it easier to search with little or no subject knowledge, it often makes it harder to determine the relevance of the results returned. Especially for an instructor that is trying to teach skills such as search strategy and search efficiency, large results sets from any unbounded numbers of different keyword searches can be a distraction.

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[18] JEFF JARVIS, WHAT WOULD GOOGLE DO? 28 (2008).

For instance, in the example above, alternate terms for defamation could also be "tort," "lies about someone," "untrue statement," "embarrassing," or equally as frustrating, just the pasting of the entire fact pattern into a natural language search box. As if search formation was not already complex enough, each of the above searches will return hit lists, some quite large, that can waste the untrained law student's or attorney's time or even worse lead them to a faulty understanding of the law.[19]

As vendors realized that zero results equaled zero revenue, they developed alternative searches, such as the famous Google "did you mean" feature, to give users something to click on, even after a poorly formed or mistyped search. This makes useless search results very attractive because it can give unsophisticated users the sense that they were very close to correct in their search formation. Especially for new law students, but also for attorneys researching in unfamiliar areas, the search engine's suggestion can seem more intelligent than the user's original query. Like keyword ability, there are benefits for experienced users. For novice searchers, the alternative suggestions can be like Google Map's written directions to an errant location. The directions are helpful if the destination is correctly entered, but in some cases are worse than useless if you don't know enough to recognize you are traveling to the wrong town.

The difficulty of trying to teach search strategies in a keyword environment is further compounded by human curiosity. As users start clicking through results that may have nothing to do with their initial search, the vendor has the potential to profit as researchers waste time. Even in a unlimited use billing model like a law school, user behavior data still can generate value for the vendor. Besides using data to evolve their search platforms, in an attempt to gain competitive advantage over competitors, nothing stops vendors from selling behavior and matched demographic data to other information brokers.

In an academic setting, where time pressures are less intense than in a firm, the harm may not be apparent. However several studies have

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[19] Minutes Brigham Young University Law Library Practitioners Council May 2009. Observation of attorney Mike Esplin. "New attorneys often have trouble seeing the forest through the trees. They find cases that have key words that cover the topic, but they miss the larger point that the case is about." On file with the author.

appeared to show that hyperlinks in documents actually lead to a decrease in comprehension.[20] Besides the loss of concentration, as students become comfortable taking the tool's suggestion without understanding why the suggestions are being presented, they significantly increase their chances of being sidetracked by the tools used in their research process. Vendors can claim that those additional aids were designed with no ulterior motives, just as a way to help attorneys identify materials that they may have missed. But the fact that the methods used to develop the options are closely guarded trade secrets[21] prevents teachers from gaining critical insights they can pass on to their students.[22]

The Boulder Statements help legal research faculty address these challenges. They provide a foundation for developing problem-based exercises that help students both master the sources of legal research and also understand the context and limitations that are associated with developing search interfaces. Students must be taught methods to both leverage resources' strengths at the same time they monitor the resources' weaknesses. This is especially important for highly mediated systems, since they have a potential to distort researchers' perception of the problem. Students can only benefit from the increasingly complex search tools if they understand how the tools mediate between the sources and structure of law to ultimately influence their perception of the problems they are trying to solve.

Asymmetry with Traditional Structure of Law

When examining the difference between the historic book publishing world and the present web-delivered commercial markets, another change needs to be noted. At least superficially, books appear to have developed in a closer cognitive symmetry to the practice of law than the general web tools. It is difficult to make this assertion without

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[20] CARR, *supra* note 11, at 126–30.

[21] *See* Ronald E. Wheeler, *Does WestlawNext Really Change Everything? The Implications of WestlawNext on Legal Research*, 103 LAW LIBR. J. 359, 360 (2011).

[22] The conflict between traditional education and sales models gives weight to the consideration of just who teaches legal research in law schools. *See* Shawn Nevers, *Candy, Points, and Highlighters: Why Librarians, Not Vendors, Should Teach CALR to First-Year Students*, 99 LAW LIBR. J. 757 (2007).

falling into the trap "technological determinism."[23] Admittedly the ultimate effects of the de-emphasis of digest based searching and the rise of keyword models can be overstated, especially when other social and cultural influences of changes in the law are not discussed.[24] Yet the primacy of the digest system does not have to be proved to accept the fact that using a digest exposes a researcher to a certain way of conceptualizing thoughts. Whether the outline or the descriptive word index is used, the fact that the digest has extracted or summarized text from cases obviates the need for a researcher to read every case in its entirety. The digest also supports the idea that there are various points of law, potentially many, in every case that trained readers can identify and extract. Whether the form of the research tool follows function or the function of the court system follows form, the digest structure attempts to expose the information in cases by organizing subjects found in the cases. This is conceptually not far from how attorneys practiced law since the early part of the 18th century, and still bears at least some resemblance to how lawyers conceptualize and argue law today.

Legal Structure

Though conceptually it should not be controversial to argue that the tools lawyers use shape their perception of both the context and function of the legal system within which they work, the fact that both the tools and the nature of the legal structure can be independently moving targets often makes analysis difficult. Pinning down just what legal structure we are talking about can be a very challenging exercise. Many graduating law students do not even end up working in any clearly defined traditional legal environment.[25] Those that do may

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[23] *See* Nazareth A. M. Pantaloni III, *Legal Databases, Legal Epistemology, and the Legal Order*, 86 LAW LIBR. J. 679, 682 (1994).

[24] *See* Joseph A. Custer, *The Universe of Thinkable Thoughts Versus the Facts of Empirical Research*, 102 LAW LIBR. J. 251 (2010).

[25] If Bill Henderson's estimates are correct in the decade between 2010 and 2020, law schools will graduate more than 376,000 students than the Bureau of Labor Statistics expects the market to create jobs for. (Bill Henderson, *The Job Outlook for Lawyers: Projections from the BLS*, THE LEGAL WHITEBOARD, (Apr. 2, 2012) http://lawprofessors.typepad.com/legalwhiteboard/2012/04/the-job-outlook-for-lawyers-just-released-projections-from-the-bls.html). Since 2008

narrowly specialize or work in a negotiation setting where rules of law are less important than social intelligence and basic psychology.

There are persistent popular and academic arguments that law itself is somehow changing. Often these arguments come in the form of "technological determinism,"[26] positing that technology is the primary driver of social and cultural change. While believing that all change is driven by technology may be comforting on an emotional level, such a tidy approach marginalizes the real and important struggle that society encounters when social and cultural standards change. Though there is no doubt that technology has contributed to changing approaches to legal research, there is no simple way to tell what influence that change has had on domestic legal structure.

Scholars have noted that the federal courts have heard fewer cases over the last decade of the twentieth century,[27] and that citations to secondary sources have increased during the later half of the twentieth century.[28] One scholar has even noted the increasing frequency of Wikipedia citations in federal courts.[29] Yet none have argued that these trends have changed domestic law's reliance on primary sources for determining outcomes at the trial court level, whether in the federal district courts, or state courts.

Whether the legal system has changed is much more difficult to prove than it is to assert. It has been popular to argue that the legal

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many law school graduates have had to find work as educators, business professionals, and even clerical staff due to the lack of opportunity in more traditional legal fields.

[26] Pantaloni, *supra* note 23 (quoting anthropologist Ruth Finnegan). Pantaloni's Cassandrian article warned that by viewing "the relationship between technological change and societal and cultural changes as unilaterally .... we may reach misguided conclusions about the proper present course of action." *Id.* at 682.

[27] Marc Galanter, *The Vanishing Trial: An Examination of Trials and Related Matters in Federal and State Courts*, 1 J. Empirical Legal Stud. 459 (2004). (In the time period covered the author found "the number of trials in federal court has dropped by more than 60 percent and the portion of cases disposed of by trial has fallen from 4.7 percent to 1.8 percent." *Id.* at 460.)

[28] Frederick Schauer & Virginia J. Wise, *Legal Positivism as Legal Information*, 82 CORNELL L. REV. 1080 (1996–1997). ("Starting in 1991, there has been a substantial and continuing increase in the Court's citation of nonlegal sources." *Id.* at 1108.)

[29] Lee F. Peoples, *The Citation of Wikipedia in Judicial Opinions*, 12 YALE J. L. & TECH. 1 (2009).

structure continues to change with the advent of electronic sources of law.[30] Articles tracking increased secondary source citation by the United States Supreme Court document an increase in such citation, but do not evaluate whether the secondary sources were part of an opinion's holding or dicta.[31] A similar study of federal courts citing Wikipedia does attempt to analyze the 407 references, but provides no clear definition of holding, but instead a definition of "non-dicta" that includes analysis, and reasoning beyond just holding.[32] This argument loses some of its appeal when legal functions beyond appellate trials are considered. Most arguments attempting to document change fail to

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[30] This may be as common as the argument that "Louis Brandeis's use of social science and statistics in his brief in *Muller v. Oregon* … legitimized evidence drawn from worlds of learning outside the law." Berring, *Legal Information and the Search for Cognitive Authority*, *supra* note 6, at 1688; *see also* John W. Johnson, *Creativity and Adaptation: a Reassessment of American Jurisprudence, 1801–1857 and 1908–1940,* 7 RUTGERS-CAM L.J. 625, 642 (1975–1976). However, forty years before *Muller*, Joel Prentiss Bishop counseled law students to look to sources beyond just law books. J.P. BISHOP, THE FIRST BOOK OF THE LAW, EXPLAINING THE NATURE, SOURCES, BOOKS, AND PRACTICAL APPLICATIONS OF LEGAL SCIENCE, AND METHODS OF STUDY AND PRACTICE 114–116 (1868); in both cases, electronic form and in the Brandeis briefs, the conclusion is true only for a narrow universe of legal practice and rarely acceptable at the trial court.

[31] *See* Schauer, *supra* note 28; Frederick Schauer & Virginia J. Wise, *Nonlegal Information and the Delegalization of Law*, 29 J. LEGAL STUD. 495 (2000); and Frank B. Cross, James F. Spriggs II, Timothy R. Johnson & Paul J. Wahlbeck, *Citations in the U.S. Supreme Court: an Empirical Study of Their Use and Significance*, 2010 U. ILL. L. REV. 489. This type of analysis is what David Hackett Fischer called "the quantitative fallacy … which consists in the idea that the facts which count best count most";" facts are important in proportion to their susceptibility to quantification." HISTORIANS' FALLACIES: TOWARD A LOGIC OF HISTORICAL THOUGHT 90 (1970). Without analyzing the cases to determine what the citations are used for, statistical conclusions about influence in America law are unpersuasive.

[32] Peoples, *supra* note 29, at 7 (In spite of the conclusion that, "The citation of Wikipedia in judicial opinions has already shaped the fabric of American law," the most telling influence of the Wikipedia citations was when they were "used by courts in evaluating the arguments of the parties, to support the court's reasoning, or to define "'legislative facts.'").

address the structural aspects of the adversarial system that have restraining influences.[33]

In a typical litigation case, an attorney is representing a party that is working with or against a second party. Novel arguments are not presented just to a final arbiter, but are presented to opposing counsel. This allows the opposing party to argue against novelty. In most cases a third party then weighs the arguments and authority on both sides of the issue and makes a ruling based on whatever constraint exists in that forum. This is different than academic legal writing, where the strength of the argument is typically only reviewed by law student editors, few, if any, who have the same stake in the outcome as do opposing counsel in a trial setting.[34]

The ultimate decision made by the adjudicating party is also more difficult to characterize than is commonly taught. First-year law students learn the concepts of primary and secondary sources, and mandatory versus persuasive authority. But those distinctions are much less sanitary in the real world, even when that world is restricted to only case opinions.[35] From a safe metacognitive abstraction, for purposes of

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[33] It is interesting to note that in a law school commencement address two years before the appointment of Langdell, graduates at the University of Michigan were reminded. "Every profession, and every special department of culture has its weakness. But it should be borne in mind that a very large part of the business of every lawyer is transacted with his clients alone, not in the way of ferreting out guilt, or defending the accused, but in the adjustment of business according to law; it should be remembered also that in the case of every trial there is one to act in the capacity of a judge, in all except the most trivial cases, himself a member of the profession, called upon to balance evidence, and weigh justly all that is urged on either side, and to construe law so as to accomplish its intended purpose." (Erastus Otis Haven, *An Address to Lawyers*, 2 MICH. UNIV. MAGAZINE 291, 299 (1968)) (commencement address delivered, March 5, 1868).

[34] *See* Janet Cooper Alexander, *John Yoo's War Powers: The Law Review and the World*, 100 CALIF. L. REV. 331, 352–55 (2012). ("The publication process for legal scholarship is not well equipped to ensure that articles have been rigorously reviewed by experts in the field, as is the norm in other disciplines. Our profession relies primarily on student-run and student-edited general interest journals rather than on peer-reviewed journals. The drawbacks of this system are well known.")

[35] *See* Peter C. Schanck, *Taking Up Barkan's Challenge: Looking at the Judicial Process and Legal Research*, 82 LAW LIBR. J. 1 (1990). Schanck does a good job of explaining that at the 1st-year level the categorization is essentially simplified due to the constraints of the students' knowledge. He also raises the issue that

this discussion, the legal system that drives the legal structure is really just a hierarchy with trial courts at the bottom of the decision tree and

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the relative ease or difficulty of the case may explain why the distinction is more or less complicated. If a case has clear precedent against it, a court is much more likely to follow previous decisions. This fits with Judge Edwards's explanation of how judicial decisions are made; *see* Harry T. Edwards, *The Judicial Function and the Elusive Goal of Principled Decision Making* 1991 WIS. L. REV. 837:

> In my view, most cases are "easy," in that the pertinent legal rules are readily identified and applied to the facts at hand, revealing a single "right answer." I continue to find that roughly one-half of the cases I hear each year are "easy" and virtually all of these are disposed of without dissent. Very few such cases give rise to any discernible political concerns. In a second category of cases, which I call "hard," each party is able to advance at least one plausible legal argument in its favor. Resolution of such disputes frequently requires judges to consider which among competing legal principles and precedents are most applicable, analyze the purposes of various statutory and constitutional provisions, evaluate complex agency records and perform other similarly sophisticated decision making tasks. At the conclusion of such research and review, however, the arguments of one party to a "hard" case seem to me demonstrably stronger than those of the other, and the case is decided accordingly. I have estimated that approximately 35 to 45% of the cases before the court are "hard" in this sense. In my experience, judges hearing these cases generally feel themselves bound by their view of the law, and identify the sounder arguments without recourse to their own political opinions. Not surprisingly, therefore, there is substantial agreement among judges as to the proper disposition of "hard" cases.
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> That leaves from 5 to 15% of our cases in the "very hard" category, making it by far the smallest of the three. In this narrow set of cases, careful research and reflection fail to yield conclusive answers. The relevant legal materials, thoroughly studied, show only that the competing arguments advanced by the parties are equally strong, and the judges who must decide are left in a state of equipoise. Disposition of this small number of cases, then, requires judges to exercise a measure of discretion, drawing to some degree on their own social and moral beliefs. That judges may find themselves in disagreement as to the outcome of these "very hard" cases is thus to be expected, and represents something quite different from stark political decision making. The important point, I think, is that so-called "very hard" cases are viewed as such not because they raise situations in which judges are inclined to engage in result-oriented decision making, but, rather, because these cases admit of no clear answer. And when there is no discernible "right" answer to a case, it is more likely (although not inevitable) that decision making may be influenced by political or ideological considerations.

Id. at 856–57.

multiple levels of appellate courts above. The trial courts are bound by constitutions, statutes, higher courts, and other rules of procedure. Though some have argued that the procedure rules have been changed drastically through judicial rulings in recent years,[36] most attorneys who practice law successfully do so by navigating authoritative statutes and cases, in a way that would be relatively recognizable to attorneys who practiced 100 years ago.

Tools Relationship to Legal Structure

Though the sources cited are very similar, the ways that attorneys find them, specifically the research tools that are used in the process, are very different, even for attorneys that were trained on online legal research sources twenty-five years ago. As the interfaces have changed so has the way the research tools mediate their sources. Trying to find an easy point of comparison between the legal structure and new Google-like research tools can be difficult. Fortunately, several tools persist in the electronic world. Though digests in one form or another are used in WestlawNext and LexisAdvance, they are not nearly as prominent as they were in the book-based research environment. Citators and Statutes, however, still maintain close cognitive ties to the basic legal structure of domestic law.

Citators illustrate how conceptually close the book-based research tools were to the actual practice of law. Shepard's editors were highly skilled at reading cases and determining procedural dispositions. They essentially did the same thing that an attorney did each time a new case was published. Shepard's signals represented a good summary of the possible universe of rulings at bar. Shepard's became so well established that courts, at least at the federal level, chided attorneys who failed to use them appropriately.[37] The tool itself reinforced the hierarchy of the practice of law, where an overturned or criticized case was not as valuable as a case that had been affirmed and or cited positively by a higher court. The tool's relationship to the legal system was well aligned. By using the tool, a user could learn about the structure of the

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[36] Arthur R. Miller, *Are the Federal Courthouse Doors Closing—What's Happened to the Federal Rules of Civil Procedure*, 43 TEX. TECH L. REV. 587 (2010–2011).

[37] *See* Berring, *Chaos, supra* note 6, at 195.

legal system. Courts are divided by jurisdiction, state and federal, with courts of various degrees of hierarchy. Reported opinions have precedential value. Cases develop their value based on procedural posture, where they are in the process of appeal and final decision, as well as how later judges accept or reject their reasoning. Shepard's aided lawyers in understanding of the value a particular case would have in a specific jurisdiction.

It is important to note that even in the nostalgic book driven research environment, Shepard's functioned as an intelligence amplification tool. Lawyers had little chance of knowing, to the same degree, the status of the cases that Shepard's listed. Working with Shepard's, an attorney's understanding of law could be dramatically expanded. But since intellectual tools mediate our environment, there is a potential consequence for habitual reliance. Shepard's is so effective that busy attorneys may not bother to investigate why a case received the overturned or remanded signal. The habit of seamlessly offloading the process of evaluation and analysis to a cognitive tool creates the potential for a more thorough adversary to develop a better understanding by questioning Shepard's editorial decisions. Skilled practitioners remembered to review why a case was overturned to determine if the proposition they were arguing is still supported. But the direct relationship of the tool to the structure of law makes it straightforward for instructors to teach students both the strengths and the weakness of the tool.

Similarly only statutes also bear close resemblance to the domestic legal structure. Statutes have been a critical source of legal decisions throughout U.S. legal history.[38] Though their original electronic representation in a document by document view obscured their legal structure by blinding researchers to the outlined and often hierarchical organization that would be clearly visible in their book analogues, much progress has been made in their digital delivered interfaces. Both LexisNexis and West allow browsing by table of contents, which makes is much easier to teach students how searching statutes is related to the codified law which typically binds courts. Understanding the hierarchical structure is critical to both the research and practice of law.

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[38] In the first issue of West's Syllabi, the predecessor to the National Reporter System, close to two-thirds of the cases reported dealt with the interpretation or application of statutes; *see* MICHAEL H. HOEFLICH & WILLIAM ELLIOTT BUTLER, THE SYLLABI: GENESIS OF THE NATIONAL REPORTER SYSTEM 1–5 (2011).

Browsing the code can actually prevent errors caused by keyword searches that miss key terms of art.

For example if students were keyword searching and found the Vt. Stat. Ann. tit. 12, § 1036, in older interfaces they would have to click from document to next document before they could get some sense of the layout of the statute. As the design progressed, they would be able to browse the statute's table of contents to get a overview of the organization of the law. In both LexisAdvance and WestlawNext, browsing can be done without losing track of the selected statute. This makes it easy for instructors to point out the importance of both the subject and the sequence of a statutory code. In this instance it is easy to point out the following section 1037 which starts out with the phrase "Notwithstanding the provisions of section 1036 of this title." With the statutory code design there is a close fit between how the tool mediates the source, and how the source relates to the structure of the law.

Tools influence a researcher's perception not only of the universe of potential solutions to a legal problem, but also the original definition of the problem itself.[39] Though tools mediate our sense of reality, in terms of how we classify facts, define problems to solve, identify legal authority, and formulate potential solutions, when the tool closely aligns to the structure it is attempting to mediate, the chances for error after a researcher learns how to use the tool is small. The greater the conceptual distance between the tool and the structure it is attempting to represent, the greater the potential for error. When a user's direct experiences cannot be applied to measure the accuracy of a tool, it is less likely that mistakes will be detected.

With the advent of online keyword-based tools, the conceptual distance between the legal system and many of the tools widened. Some have suggested that the shift starting in the last decade of the 20th century represented a distinguishable break with former cognitive authority.[40] Others have proposed the expansion of secondary authority cited by the U.S. Supreme Court starting at roughly the same time as evidence that easily accessible digital media has changed the fabric of

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[39] "The form of a question may even block us from seeing solution to problems that become visible through a different question." NEIL POSTMAN, TECHNOPOLY: THE SURRENDER OF CULTURE TO TECHNOLOGY 126 (1992).

[40] Berring, *Legal Information and the Search for Cognitive Authority*, *supra* note 6.

the law. But few, if any practicing lawyers, can happily quote Sesame Street as a basis for their argument without fear of sanctions.[41] Though federal opinions demonstrate a trend of increasing citation to secondary sources, the vast majority of all legal matters are still decided by judges, both state and federal. Those judges make rulings with reference to traditional primary sources, reported cases, statutes, and administrative rules. What has changed is that the tools are less likely to resemble the traditional structure of law. The redesigns of both Westlaw and LexisNexis initially separated the selection of a source from the search engine. In this way, both followed Google. Both eventually implemented pre-search filtering for jurisdiction and document type, but the "pray and spray" search strategy that leads to post search filtering by facets, has no relation to the ordered systems of courts, federal, state, municipal, or administrative. After critical reaction from attorneys and librarians, both vendors ultimately returned various degrees of control to the user in a model closer to Amazon.com than Google. In both tools, the citators are about the closest approximation to the legal system within which researchers will be researching. The default searching, unless pre-search filters are used, does not resemble the traditional practice of law's focus on jurisdiction and hierarchy.

Applying Boulder

What do the Boulder Statements offer faculty members who attempt to deal with the ever-changing set of research tools and these implications for the modern legal structure? The answer is a more thoughtful way of doing what many professors already do. The legal research teaching environment varies dramatically in United States law schools. Especially for first-year courses, programs can range from pre-class boot camps, to optional library instructional modules, to full year integrated courses. In any scenario, it is important to include design elements that help students understand just how the research tools may assist and distract them.

The Boulder Statements' call to teach "the resolution of legal problems through an iterative and analytical process" affords an opportunity to build on students' understanding of tools' influence on their individual thought. The expectation that "students will learn to continu-

[41] Schauer, *Nonlegal Information*, *supra* note 31, at 503.

ally re-evaluate their progress and results," builds on concepts of expert practice, which suggest that repetition of task with increased orders of difficulty, combined with metacognitive reflection, has the potential to lead to the highest level of performance. Teachers must design activities that start with basic skills, repeat those skills to develop basic understanding, and then build on the skills by exercises with increased difficulty. This fits well into the Boulder Statements' call for teaching "through an iterative and analytical process" through "practical" and "cognitive apprenticeship."

Based on this pedagogy, exercises do not need to be complex at first, but should start simple and build on foundational skills that are developed early in the process. The basic skills are used as scaffolding for understanding more complex stills. In formal classes, multiple exercises can be built around one real world fact pattern to teach required concepts and skills. In all class situations educators must decide the duration/attention span of the audience and the ultimate goals for the particular exercise. For most first-year courses, mastery may be a relative term, signifying mostly that a student can continue her legal research training largely on her own. In advanced courses, the examples can build on previous year's instruction and student experiences working in intern-, externship, and clinical settings; exercises can be based on less structured problem sets that come closer to the difficulty of practice experience.

The Boulder Statements' Signature Pedagogy Statement suggests that examples should be based in the real world, but this is intended to make teaching meaningful to students, not to simulate the rigors of legal practice before students are ready. At whatever level they work, students should have the experience of apprentices, which means they actually struggle to do the work themselves with access to experienced mentors who can supervise and guide their progress. This does not mean that all exercises have to be fully developed comprehensive problems. The realness of the assignment can be handled through an interesting problem description and question prompt. But the first step in teaching the relationship of legal research tools to the structure of law is designing an exercise that can help students conceptualize just how the tools will influence their perception of the process.

Again, it must be stressed that designing exercises that display the cognitive partnership between tools and the researcher does not have to be difficult or sophisticated. Though the following example will no doubt insult the intelligence of some faculty, it is offered as an object

lesson on how even the most basic exercise can be extended through the Boulder Statements pedagogical principles to offer much deeper understandings of the structure and relationships of legal research tools and the systems they mediate. Something as basic as looking up a case by party name can illustrate how the tool mediates the legal system.

For instance, requiring students to look up cases by party name on Google Scholar affords an opportunity to discuss the difference between free and pay legal research engines. Google's dataset is so large that common names, such as Smith, are hard to find. The fact pattern can be simple. Your supervising attorney sees you in the hall and asks you if you can send him a copy of the Smith case. To enforce the concept of pre-search strategy the instructor can ask what students would do.

Bold students will jump straight to questions that differentiate which Smith case. Some will even think of jurisdiction limits, and possibly some will raise the question of date as a meaningful distinction. If they are not directed in the exercise instructions, few students will think to ask which resource to start with. The Boulder Statements include teaching students that "the importance of understanding the legal system in which their question arises and evaluating available legal resources" as a critical task. The sophistication and specificity of the theory may be intimidating, but even in this very simple example; students can be directed to think about the difference between free resources such as Google Scholar and commercial resources such as Bloomberg, LexisNexis, and Westlaw. Reminding students that they should think about their options before they start searching lays the foundation for more formally developed search strategy in later instruction.

In most cases, the exercise prompt and class discussion will take three or four minutes. After students are directed to Scholar, some will have already made it there on their own; the mediated aspects of apprenticeship become useful. Pointing out Scholar's advanced features, including jurisdiction and date scoping would be a natural starting point, but the Boulder principles would anticipate these tool features sparking a discussion about judicial hierarchy. What are the differences between jurisdictional limits and why are they important. The filters Scholar offers have direct correlation to the structure of the legal system. This is a classic example of where the tool has close cognitive symmetry to the structure of law. Without thoughtful preparation, most instructors would

miss the connection, but the Boulder Signature Pedagogy Statement directly anticipates this type of interwoven scaffolding.[42]

The exercise would require students to do the search for party name themselves. Ideally they would have to repeat the task several times.[43] This will help them understand how to use the tool and learn to think about why the relationship between the tool and legal structure was important to the instructor. It will take much more experience before they will deeply understand the concept that has been introduced to them—tolls mediate your understanding of how and what type of questions you can ask and ultimately your understanding of the law you are researching. But in a very brief time, the foundational scaffolding has been erected. To prevent taking too much in-class time, follow-up exercises can include looking up the same cases using Bloomberg, LexisNexis and West tools. Not all sources need be assigned, but the prompts should build on what was learned at Scholar, concepts such as jurisdiction and date filtering can be referenced, and new concepts such as templates for party name, can be used to ask follow up questions that go beyond just requesting the citation. Again, the exercises do not have to be complex; their design should be thoughtful. Given the other burdens on law students' time, the combination of in-class and out-of-class assignments will take them less than twenty minutes, but if they are able to understand the larger context their tools fit into, they are far ahead of those who can't.

Within the domain of law, teaching any legal topic ultimately calls upon a series of tools to both understand and apply legal reasoning. In fact, legal reasoning itself can be viewed as a cognitive tool developed to assist humans to define and solve problems. Though ultimately the reasoning can become part of us, our first encounters are typically external, as some communicated element that we must ingest, decipher, to some extent understand, and ultimately apply. Tool use is so imbedded in human nature that we easily take for granted how we develop

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[42] "We teach an intellectual process for the application of methods for legal research by: 2) Showing the relationship of legal structure to legal tools and evaluating the appropriate use of those tools." Boulder Statements, *supra* note 1.

[43] Students often lose interest quickly once they understand the basic process. This may be supported by the idea expertise can be a source of frustration when students perceive that a course is wasting their time. *See* Gunter Daniel Rey & Andreas Fischer, *The Expertise Reversal Effect Concerning Instructional Explanation,* INTR. SCI. (04 May 2012).

skills to productively use them. When the tools themselves or even the environment in which they are used rarely change, this may not be a great problem. However, when tools change rapidly, or when the context to which they apply changes, users must have coping skills to adjust their practices to maximize the tools utility.

Legal research is taught in an environment where tools change rapidly, and the legal structure the tools mediate always has the potential to be obscured by the tools. Students who learn how to identify the effects of their legal research tools, including the effect on the perception of both legal problems and potential solutions, will be less likely to be misguided by their tools. Additionally those students who understand how to objectively view their activities and the tools that influence their perceptions will have a much greater chance of being successful lifelong learners, a new foundation for a learned profession.