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ELECTRONICALLY MANUFACTURED LAW

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I. INTRODUCTION

Law now arises, evolves, and is practiced and applied through an electronic medium. From top to bottom, the law proceeds through electronic channels. First, with respect to the content, dissemination, and digestion of judicial opinions, judges cite to Internet sources in opinions available online, bloggers post immediate reactions to opinions, and scholars upload analyses to the Social Science Research Network. In the formation of legal arguments and documents, attorneys research in electronic legal databases, use word processing to draft documents, exchange work product over e-mail, and file papers electronically. Additionally, in the development of case facts, smoking guns take the form of errant emails, document reviews mine electronic databases, and depositions are videotaped. Electronic resources affect even the way attorneys are hired and retained — students use *Above the Law*[1] to vet firms, firms employ Google searches to vet law students, and clients use web profiles to vet attorneys. The recent furor following *Kennedy v. Louisiana*[2] over the Supreme Court's failure to discover that the Uniform Code of Military Justice authorizes the death penalty for child rape[3] underscores law's entanglement with the electronic medium. This oversight by litigants and the Court alike suggests a pitfall of electronic research. Researchers may have become dependent on the seemingly-inclusive "All Federal Cases" database; however, military cases do not appear in this database. That the omission was brought to light on the blogosphere[4] and quickly made its way onto the pages of the *New York Times*[5] and ultimately into a

1. Above the Law: A Legal Tabloid, http://www.abovethelaw.com (last visited Dec. 19, 2008).

2. 128 S. Ct. 2641 (2008).

3. Posting of Dwight Sullivan to CAAFlog, The Supremes Dis the Military Justice System, http://caaflog.blogspot.com/2008/06/supremes-dis-military-justice-system.html (June 28, 2008, 18:25 EDT).

4. *Id.*

5. Linda Greenhouse, *In Court Ruling on Executions, a Factual Flaw*, N.Y. TIMES, July 2, 2008, at A1; Adam Liptak, *Louisiana Asks Court to Revisit Rape Laws*, N.Y. TIMES, July

petition for rehearing[6] attests to the power of online legal commentary.

In this new age of electronically manufactured law, the raw materials of law — case texts — increasingly reside in digital form and are studied by legal researchers using digital means. A description of the not-so-distant past when the raw materials of law were bound in hard-copy print illustrates the magnitude of this change:

> Lawyers are probably more dependent upon the literature of their profession than their prototypes in any other field. They simply cannot function away from a working law library, because law books are not merely the repositories of secondary reference materials, but are the actual and indispensable source material of the law. . . .
>
> [D]ecisions as made and . . . rules as enacted are not published and arranged on book shelves by subject matter, but by jurisdiction and date. Thus, there is an enormous and constantly changing mass of decisions and legislative rules. From these the lawyer must speedily and accurately extract the law applicable to his specific problem, so as to be able with some degree of certainty to predict the action of a court to which the problem may conceivably be presented. . . . He who understands the why and how of law books has a very substantial advantage over him who does not.[7]

This over fifty-year-old summary of the method and import of legal research, with its emphasis on law libraries and law books, shows the fundamental transformation of legal research. The print-based research process has given way to electronic research using databases such as Westlaw and LexisNexis.

22, 2008, at A12 ("Lawyers for the State of Louisiana asked the United States Supreme Court on Monday to reconsider its decision last month striking down laws that made child rape a capital offense. The lawyers said the court's decision overlooked two crucial legal developments: a 2006 federal law and a 2007 executive order making child rape a capital crime under military law.").

6. Petition for Reh'g, Kennedy v. Louisiana, No. 07-343 (U.S. July 21, 2008), *available at* http://www.scotusblog.com/wp/wp-content/uploads/2008/07/rehear-kennedy-v-la-7-21-08.pdf. The Supreme Court denied the petition for rehearing but added a footnote to the opinion stating that "the military penalty [did] not affect [the majority's] reasoning or conclusions." Kennedy v. Louisiana, 77 U.S.L.W. 3194 (U.S. Oct. 1, 2008) (mem.), *available at* http://www.supremecourtus.gov/opinions/07pdf/07-343Kennedy.pdf.

7. MILES O. PRICE & HARRY BITNER, EFFECTIVE LEGAL RESEARCH: A PRACTICE MANUAL OF LAW BOOKS AND THEIR USE 1–2 (Augustus M. Kelley 1969) (1953).

Prior shifts in the communication of law, such as the advent of writing and print, contributed to the development of core legal concepts such as abstraction and precedent; the ongoing sea change in the way that attorneys find and access the law will likewise transform the law's practice and content. Indeed, finding the raw materials of law through the legal research process drives the legal enterprise and the development of the law, informing and shaping the arguments and decisions that attorneys make as advisers, gatekeepers, adversaries, and judges.

Scholars, anthropologists, and law librarians caution that the shift from print to electronic research will significantly impact the law in myriad ways.[8] To date, however, these predictions and warnings have fallen on deaf ears. Although many of the predicted impacts of the shift to electronic research should, if accurate, warrant a concerted response from the academy and profession, little effort has been made to critically examine and address the changes resulting from the shift in research process. Time for debate over the normative question of whether a shift to electronic research is "good" or "bad" may be long past. However, now is the time to understand the consequences of the shift to electronic research and manage those consequences head on.

This Article seeks to strengthen the case for the academy and the legal profession to pay heed to the consequences of the shift to electronic research, primarily by employing cognitive psychology to guide predictions about the impacts of the shift and, thereby, address a perceived credibility gap. This credibility gap arises from the difficulty and imprecision in postulating how changes in the research process translate into changes in researcher behavior and research outcomes. Applying principles of cognitive psychology to compare the print and electronic research processes provides an analytical basis for connecting changes in the research process with changes in researcher behavior and research outcomes.

Cognitive psychology generates two specific predictions about how electronic research will change the law. First, electronic research will lead to increased diversity in framing — divergence in the selection of the legal theory or theories through which to conceptualize facts, arguments, and cases. Second, electronic research will lead to more tilting at windmills[9] — the advancement of marginal cases, theories, and arguments. The Article explores how an increase in diversity in framing and tilting at windmills could affect the legal profession and the law. For example, in an adversarial system, judicial options for case resolution are largely defined and constrained by the

8. *See infra* Part II.D.

9. The phrase "tilting at windmills" derives from the Miguel de Cervantes novel *Don Quixote* and is used to connote a futile or unwinnable pursuit or battle, as exemplified by the would-be knight Don Quixote's unwitting attack on windmills that he believes to be giants.

theories proffered by counsel. Diversity in framing could expand judicial authority by providing judges with a wider variety of options for dispute resolution. This underlines the way in which counsel serve as gatekeepers by exercising judgment about which cases and theories have sufficient merit to warrant pursuit. Increased tilting at windmills may require recalibration of the existing limits placed on lawyers in their role as gatekeepers. Recalibration may be necessary to prevent the dedication of client and judicial resources to lost causes spurred by lapses in judgment related to electronic research and to allow attorneys to advance, without fear of sanctions, thoughtful arguments designed to push doctrinal boundaries.

Specifically, Part II reviews existing legal theory, scholarship, and data that suggest that the shift to electronic research will likely have broad-ranging impacts. Part III compares print and electronic research and discusses three particularly salient changes in research process: (1) electronic researchers are not guided by the key system to the same extent as print researchers when identifying relevant theories, principles, and cases; (2) electronic researchers do not encounter and interpret individual cases through the lens of key system information to the same extent as print researchers; and (3) electronic researchers are exposed to more and different case texts than print researchers. Part IV uses principles of cognitive psychology to examine these process differences and predict two major non-process consequences of the shift to electronic research: increased diversity in framing and tilting at windmills. Part V concludes by assessing the broader significance of these hypothesized consequences.

II. WHY THE SHIFT TO ELECTRONIC RESEARCH MERITS ATTENTION

Legal research is a cornerstone of the legal process and the development of the law,[10] and electronic research effects obvious changes in the way that lawyers conduct legal research.[11] However, while the

10. *See* Lucia Ann Silecchia, *Legal Skills Training in the First Year of Law School: Research? Writing? Analysis? Or More?*, 100 DICK. L. REV. 245, 269 (1996) ("First and foremost, research and writing — along with analysis — have been repeatedly identified as the two most basic skills needed by competent attorneys. They are at the heart of what attorneys do in practice." (citations omitted)). *See generally* Michael S. Fried, *The Evolution of Legal Concepts: The Memetic Perspective*, 39 JURIMETRICS J. 291, 303–06 (1999) (describing doctrinal evolution and observing that Oliver Wendell Holmes "argued that . . . the development of the law can be considered a 'struggle for life among competing ideas,' leading to 'an ultimate victory and survival of the strongest'" (quoting Oliver Wendell Holmes, *Law in Science and Science in Law*, 12 HARV. L. REV. 443, 449 (1899))).

11. Law librarians and legal research instructors report that an overwhelming number of students trained in electronic research rely exclusively on electronic research — even those who are required to learn the mechanics of print research as well. *See, e.g.*, Lee F. Peoples, *The Death of the Digest and the Pitfalls of Electronic Research: What Is the Modern Legal*

mechanical differences between the conduct of print-based research and electronic research are apparent, the conclusion that these differences will generate non-process impacts[12] on the law and the practice of law[13] does not necessarily follow.[14] Is there any reason to think that the shift to electronic research will have broader impacts beyond the niceties of individual researchers' practices? Namely, will it give rise to changes in researcher behavior and research outcome that influence the decisions that attorneys make, the content of their argument and analysis, and ultimately the development of doctrine and the profession? After all, the content of the law is largely unchanged, regardless of whether a researcher finds a hard copy of a case in a reporter volume after using a print digest or reviews it in electronic form on a computer screen after locating it using an electronic database search. And the body of the law being researched remains the same (for the most part),[15] regardless of whether it is being accessed by researchers through print or electronic means.

Although not directly concerned with this question, work from both legal and non-legal fields strongly suggests that the digitization of the legal research process is likely to have significant conse-

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Researcher To Do?, 97 LAW LIBR. J. 661, 674–75 (2005). *See generally* Robert C. Berring, *Legal Research and the World of Thinkable Thoughts*, 2 J. APP. PRAC. & PROCESS 309, 313 (2000) [hereinafter Berring, *Thinkable Thoughts*] ("Law students come to law school trained in Internet searching, fully conversant with modern search engines and interfaces. . . . They tolerate very little in the way of traditional legal research training."). There is also evidence that even the "old guard" is adapting to and adopting electronic research. *See, e.g.*, APPELLATE RULES ADVISORY COMM., JUDICIAL CONFERENCE OF THE U.S., MEETING OF APPELLATE RULES ADVISORY COMMITTEE, 18–19 (April 13, 2004) [hereinafter MEETING OF THE ADVISORY COMMITTEE] (Testimony of the Honorable Myron H. Bright) ("Anyway, speaking of the computer age, I just came back from computer school at age 85 and I wasn't the only older judge there."), *available at* http://www.uscourts.gov/rules/0413APPE.DOC.pdf. *See generally* Barbara Bintliff, *From Creativity to Computerese: Thinking Like a Lawyer in the Computer Age*, 88 LAW LIBR. J. 338, 344 (1996) ("Attorneys, law students, and law professors, took to computer-assisted case retrieval like bears to honey.").

12. Process impacts would include changes directly related to the manner of conducting research — for example, the ability to conduct research outside of a law library. By non-process impacts, I refer to changes in researcher behavior and research outcome that are caused by changes in the research process. Non-process impacts have the potential to influence the decisions that attorneys make and the content of their argument and analysis.

13. Of note, I do not address impacts on legal academia. For a discussion of how electronic research may impact the legal academy, see F. Allan Hanson, *From Key Numbers to Keywords: How Automation Has Transformed the Law*, 94 LAW LIBR. J. 563, 589–92 (2002) (raising the possibility that electronic research may contribute to increases in the volume of publications, the incorporation of empirical data in legal scholarship, and interdisciplinary work).

14. *E.g.*, Berring, *Thinkable Thoughts*, *supra* note 11, at 306 ("[T]here is a danger in over emphasizing the impact of technology because the format change has not truly altered the functional basis of the materials of legal research themselves.").

15. There are a number of caveats to this assertion. For example, an electronic database may not incorporate cases before a certain date or may include unpublished cases that print volumes do not. Print resources may also be updated at a different time than electronic resources, or there may be an error in either the print or electronic cataloguing of a case.

quences.[16] Additionally,[17] examples abound of the growing influence of electronic research beyond the research process, most notably in the recent debate over the treatment of unpublished cases and the centrality of electronic research to that debate.[18] Finally, a number of prior legal articles have identified potentially significant non-process impacts of the shift to electronic research.[19] Together, this existing work supports the view that the shift from print to electronic research has the potential to cause significant non-process impacts that merit attention.

A. Medium Theory and Legal Historical Scholarship

The basic observation of medium theory is that technological changes in the dissemination and preservation of information affect how information is understood and, thereby, give rise to larger societal impacts.[20] Medium theory posits that the medium by which information is communicated — for example, oral versus print — is not neutral. Instead, it significantly shapes how the conveyed information is understood.[21] In the context of the shift from print to electronic research, the relevant technological change is the advent of electronic research databases; the relevant medium change is that case law and other authorities are now predominantly communicated to the legal researcher via electronic database, screen images, and print-outs as opposed to bound, hard-copy volumes.[22] As a general matter, medium theory seems to support the idea that changing the medium through which legal researchers encounter the law will impact their understanding and practice of the law.[23]

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16. *See infra* notes 62–71 and accompanying text.

17. "A medium is any instrument of communication; it carries or 'mediates' the message . . . . The telephone, the radio, the film, the television are all equivalently media along with print and the human voice, to say nothing of painting and sculpture." INGLIS, *supra* note 21, at 21.

18. *See infra* Part II.C.

19. *See infra* notes 73–80 and accompanying text.

20. The seminal texts of medium theory include: HAROLD A. INNIS, THE BIAS OF COMMUNICATION (1951); HAROLD A. INNIS, EMPIRE AND COMMUNICATIONS (1950); MARSHALL MCLUHAN, THE GUTENBERG GALAXY: THE MAKING OF TYPOGRAPHIC MAN (1962); MARSHALL MCLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN (1964).

21. *See, e.g.*, Joshua Meyrowitz, *Medium Theory*, *in* COMMUNICATION THEORY TODAY 50 (David Crowley & David Mitchell eds., 1994); FRED INGLIS, MEDIA THEORY: AN INTRODUCTION (1990). For an analysis of medium theory in the context of legal communication, see Paul Douglas Callister, *Law's Box: Law, Jurisprudence and the Information Ecosphere*, 74 UMKC L. REV. 263 (2005).

22. *See generally* Hanson, *supra* note 13, at 570 (observing with respect to the key number system that "[t]he medium is the message: a technique for managing information became a major factor in the development of a particular concept of the nature of the law").

23. Medium theory is a complex subject fraught with intricacy and dispute. This Article relies only on the broadest notions of medium theory, as described in the text, to lend sup-

A significant body of scholarship, some grounded in medium theory, has examined how prior shifts in the way that law is communicated have influenced the development of the law.[24] Examples of these shifts include the transition from an oral tradition to reliance on the written word, the movement from scribal writing to print and moveable type, and the widespread and systematized publication of cases. Scholars draw convincing connections between the growth in the volume of reported case law and principles of legal realism,[25] and also between the advent of print and the development of robust notions of precedent.[26] Robert Berring explains that "[w]hen publication standards shifted . . . to total comprehensiveness in coverage . . . [t]he precedent that was available . . . emerged as a large body of unorganized and contradictory principles," which made it "difficult to sustain" the "myth of the grand scheme," and contributed to legal realism.[27] And Ethan Katsh observes that printing was able to "preserve the past" in a far more reliable way than was possible using oral or scribal methods, thereby laying the groundwork for the fundamental notion

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port to the idea that the shift to electronic research may have broad impacts outside of the research process itself.

24. *E.g.*, M. ETHAN KATSH, THE ELECTRONIC MEDIA AND THE TRANSFORMATION OF LAW 17–48 (1988) [hereinafter KATSH, THE ELECTRONIC MEDIA] (assessing the impact of changes in communication on a wide range of legal concepts and activities); Robert Berring, *Legal Research and Legal Concepts: Where Form Molds Substance*, 75 CAL. L. REV. 15, 21–23 (1987) [hereinafter Berring, *Where Form Molds Substance*] (identifying connections between the form in which law is published and the way in which law is conceptualized, including the influence of electronic legal research); Callister, *supra* note 21 (using medium theory to analyze the significance to law of the use of the medium of stone in ancient Greece, diorite and clay in Mesopotamia, papyrus in ancient Egypt and oral traditions in Iceland); Ronald K.L. Collins & David M. Skover, *Paratexts*, 44 STAN. L. REV. 509, 513–35 (1992) ("In important ways, law is the product of its methods of creation, transmission, and execution. . . . Any understanding of legal culture is necessarily incomplete without some real appreciation of the role played by its modes of communication, whether oral, scribal, print or electronic."); M. Ethan Katsh, *Communications Revolutions and Legal Revolutions: The New Media and the Future of Law*, 8 NOVA L.J. 631 (1984) (considering the impact of electronic communication on legal values and thought). *But see* Nazareth A.M. Pantaloni III, *Legal Databases, Legal Epistemology, and the Legal Order*, 86 LAW LIBR. J. 679 (1994) (rejecting generalizations about the impacts of technological change on the law and emphasizing social and cultural influences instead); Richard J. Ross, *Communications Revolutions and Legal Culture: An Elusive Relationship*, 27 LAW & SOC. INQUIRY 637 (2002) (questioning the causal connection between changes in communication and legal developments).

25. Berring, *Where Form Molds Substance*, *supra* note 24, at 23 (citing LAWRENCE M. FRIEDMAN, HISTORY OF AMERICAN LAW 282–92 (1973)).

26. KATSH, THE ELECTRONIC MEDIA, *supra* note 24, at 35–39; Collins & Skover, *supra* note 24, at 533 ("To this day, archetypal notions of Anglo-American jurisprudence — the force of precedent, the rule of a reasoned decision, and the supremacy of law — are linked to print. For example, the very notions of 'binding precedent' and 'supremacy of law' are premised on the extraction of a 'rule' from a past account of legal reality (i.e., a past account of legally recognized facts and reasons) in order to control a future acccount [sic] of legal reality. Critical to the enterprise of binding precedent is the fact that such accounts are provided in printed texts.").

27. Berring, *Where Form Molds Substance*, *supra* note 24, at 22–23.

"that earlier decisions of courts should control later decisions."[28] Others explain that abstraction, a fundamental cornerstone of legal reasoning, is inexorably bound to the communication of law through the written word.[29] More recently, scholars and researchers have considered the ways in which the use of technologies such as video and teleconferencing may impact adjudication.[30]

The details of these arguments, painstakingly chronicled elsewhere,[31] need not be rehashed here. For present purposes, this legal and historical scholarship is significant because it supports the general proposition that shifts in how law is communicated affect the way law is understood and practiced. Prior shifts in the communication of law contributed to, or caused, law to change and develop. Therefore it is imperative to study the most recent of such shifts, the electronic storage and retrieval of the law.

B. Legal Realism

A foundational principle of legal realism[32] is that the behaviors, experiences, and attitudes of those administering and applying the law can influence its content.[33] If the content and meaning of law do not flow exclusively from logic, reasoning, and doctrine, but also reflect the imprint of those choosing and applying that logic, reasoning, and doctrine, then understanding widely shared experiences and practices of judges and attorneys is relevant to understanding the law itself.[34]

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28. KATSH, THE ELECTRONIC MEDIA, *supra* note 24, at 33.

29. *E.g.*, Collins & Skover, *supra* note 24, at 521–22.

30. *E.g.*, Mark Federman, *On the Media Effects of Immigration and Refugee Board Hearings via Videoconference*, 19 J. REFUGEE STUD. 433 (2006); Michael D. Roth, Comment, *Laissez-Faire Videoconferencing: Remote Witness Testimony and Adversarial Truth*, 48 UCLA L. REV. 185 (2000).

31. *E.g.*, KATSH, THE ELECTRONIC MEDIA, *supra* note 24, at 17–48; Berring, *Where Form Molds Substance*, *supra* note 24, at 21–23; Collins & Skover, *supra* note 24, at 513–35.

32. This principle of legal realism is perhaps even a now generally accepted view, including in law and economics and behavioral law. *E.g.*, Daniel A. Farber, *Toward a New Legal Realism*, 68 U. CHI. L. REV. 279, 280 (2001) (book review) ("If it is to promote human welfare, law must be grounded in an understanding of behavior. This often requires the help of the social sciences to illuminate the behavior of the people whom law regulates, and also that of those who do the regulating.").

33. *E.g.*, JEROME FRANK, LAW AND THE MODERN MIND 100 (1930); Karl N. Llewellyn, *Some Realism About Realism — Responding to Dean Pound*, 44 HARV. L. REV. 1222 (1931).

34. Brian Leiter, *Rethinking Legal Realism: Toward a Naturalized Jurisprudence*, 76 TEX. L. REV. 267, 284 (1997) ("[I]f the Sociological Wing of Realism — Llewellyn, Moore, Oliphant, Cohen, Radin, among others — is correct, then judicial decisions are causally determined by the relevant psycho-social facts about judges, and at the same time judicial decisions fall into predictable patterns because these psycho-social facts about judges — their professionalization experiences, their backgrounds, etc. — are not idiosyncratic, but characteristic of significant portions of the judiciary. Rather than rendering judicial decision

Recognizing the significance of the shared experiences and practices of legal actors helps to answer the question posed by this Article: if making case law and other source material available through an electronic medium does not change the *content* of that case law, then what reason do we have to think that it might have broader impacts on the law? The response is that significantly altering the research process of those who practice and apply the law is by itself enough to suggest the possibility of broader impacts on the law that those legal actors identify, create, apply, and administer.[35] Legal research is, after all, a behavior central to the legal actor's endeavor, and it is an experience and practice widely shared by legal actors. Accordingly, legal realism's very basic insight that law's content reflects the experiences of legal actors suggests that the shift to electronic research, a change in a widely shared experience, may have significant impacts on the doctrinal evolution and practice of law.[36]

C. Unpublished Decisions, Non-Citation Rules, and Federal Rule of Appellate Procedure 32.1

The ongoing debate over the treatment of unpublished cases[37] is one example of how the shift to electronic research is already impacting the law in ways that warrant our attention — even though we do not necessarily identify these developments as related to the rise of electronic legal media.

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a mystery, the Realists' Core Claim, to the extent it is true, shows how and why lawyers can predict what courts do.").

35. Moreover, legal realism, law and economics, and behavioral law support the proposition that empirical analysis, including analysis using principles of psychology, such as that proposed in this Article, can be a beneficial tool for understanding these possible effects on law.

36. Legal realism can be understood to view doctrinal legal research and argument as irrelevant, or at least wholly secondary, to judicial decision-making, which is instead driven primarily by non-legal factors, such as case facts or a judge's personal beliefs and experiences. *See* Brian Leiter, *Legal Realism and Legal Positivism Reconsidered*, 111 ETHICS 278, 281 (2001) ("[T]he Realists all embraced the following descriptive thesis about adjudication: in deciding cases, judges react primarily to the underlying facts of the case, rather than to applicable legal rules and reasons (the latter figuring primarily as ways of providing post hoc rationales for decisions reached on other grounds)."). *But see* Joseph William Singer, *Legal Realism Now*, 76 CAL. L. REV. 465, 473 (1988) (book review) ("[T]he fact that the judge must justify the decision by conventional legal arguments constrains her, not because the law itself logically requires the result, but because the argument for a change in the law must appear to fit with existing practice, and more importantly, the argument must persuade a particular audience that is likely to be conservative about such matters. Existing doctrine may therefore be very manipulable, ambiguous, and contradictory, yet still substantially constrain judges' decisions."). Additionally, as discussed in the text, the process of legal research is part of a judge's personal experience.

37. *See* Shenoa L. Payne, *The Ethical Conundrums of Unpublished Opinions*, 44 WILLAMETTE L. REV. 723 (2008); Lauren K. Robel, *The Myth of the Disposable Opinion: Unpublished Opinions and Government Litigants in the United States Courts of Appeals*, 87 MICH. L. REV. 940 (1989); Kirt Shuldberg, *Digital Influence: Technology and Unpublished Opinions in the Federal Courts of Appeals*, 85 CAL. L. REV. 541 (1997).

In the mid-1960s and early 1970s, when the Judicial Conference and the Federal Circuits debated and then adopted limited publication rules, electronic legal research was in its nascent stages.[38] Thus, the decision to adopt limited publication rules came about with print-based research as the backdrop. The rationales for limiting publication, such as reducing the volume of case law, thereby reducing hard-copy storage and research costs, were grounded in the print-based research reality.[39] As one author has observed, "[T]he arguments in favor of limited publication plans were necessarily premised on legal storage and research as it then existed — on the printed page. Questions of cost, fairness, access, and efficiency were all fundamentally linked to this paper-based publishing regime."[40]

As this backdrop has changed in the shift to electronic research, non-publication, and accompanying non-citation, rules have been the subject of critical reexamination.[41] Important reasons for adopting those rules — such as the costs of physical storage and research of voluminous case law[42] — have been directly impacted, and in some instances rendered irrelevant, by the prevalence of electronic legal databases and research.[43]

When non-publication/non-citation rules were adopted, the act of designating a case as unpublished severely circumscribed its availability. The opinion would not be published in the printed reporter volume and thus it was usually available only to litigants in the case at bar, although repeat players, such as the government, could collect these opinions.[44] The widespread electronic dissemination of unpub-

38. Specifically, the Judicial Conference recommended that the courts of appeals publish "only those opinions which are of general precedential value," Shuldberg, *supra* note 37, at 546 (quoting REPORT OF THE PROCEEDINGS OF THE JUDICIAL CONFERENCE OF THE UNITED STATES 11 (1964)), and "directed the circuits to develop plans to limit publication of judicial opinions." *Id.* The circuits accordingly adopted individual publication rules. For an explanation of how the growth of electronic databases defeated calls for selective publication of New York state cases, see Gary D. Spivey, *Remembering James M. Flavin: The Origins (and Unintended Consequences) of Online Legal Research*, N.Y. ST. B. J., Feb. 2008, at 10, 11, 17–18 (describing how online research capabilities "spur[red] an insatiable demand for access to an ever-expanding body of legal information," thereby "sound[ing] the death knell to calls for greater selectivity in the publication of decisions").

39. Shuldberg, *supra* note 37, at 547–49.

40. *Id.* at 556.

41. *See, e.g.*, MEETING OF THE ADVISORY COMMITTEE, *supra* note 11.

42. Indeed, in responding to public defenders' expressed opposition to a Ninth Circuit rule allowing use of unpublished opinions, one attorney reportedly remarked that public defenders in the Ninth Circuit "'must be scared of computer research.'" MEETING OF THE ADVISORY COMMITTEE, *supra* note 11, at 107 (comments of Stephen Barnet, Professor, University of California, Berkeley).

43. Schuldberg, *supra* note 37, at 556–63.

44. Robel, *supra* note 37, at 955 ("[B]ecause the [unpublished] opinions are most often distributed *only* to parties and judges, the frequent litigants will have unique access to a useful source of information known only to them and the judges before whom they appear.").

lished decisions, however, meant that those decisions were often as readily available as published decisions.

Under these changed circumstances, both judges and lawyers began to place greater emphasis on unpublished decisions.[45] Judges appeared unable to resist the temptation to invest unpublished decisions with meaningful reasoning and analysis, perhaps because their "unpublished" words were now broadcast far and wide.[46] Practitioners contended that judges used unpublished cases to resolve novel questions.[47] Litigants could not help but seek out, rely on, and cite to these unpublished decisions, often in violation of prevailing non-citation rules.[48]

In response to growing debate about the appellate courts' inconsistent approaches to non-publication and non-citation rules, the Federal Rules Advisory Committee recently adopted a new Federal Rule of Appellate Procedure, Rule 32.1.[49] Rule 32.1 permits attorneys to cite to unpublished decisions. While circuits remain free to determine how and when to designate decisions as unpublished and what level of importance to afford them, attorneys are now free to cite to unpublished decisions, at least in federal courts.[50]

Records from the drafting and adoption of Rule 32.1 illustrate the great extent to which electronic databases and legal research underscored the need for the new rule and drove the debate regarding its adoption. For example, Judge Scirica, Chair of the Standing Committee on Rules of Practice and Procedure, explained that two of the chief concerns about allowing citation to unpublished decisions — the concern that permitting citation will increase the time that judges devote to drafting unpublished decisions and the concern that permitting citation will create advantages for institutional repeat litigants with treasure troves of collected unpublished opinions — are blunted by "the

45. This is not to suggest that prior to electronic publication, unpublished opinions had no value or were not collected and used by those with access. *See* Robel, *supra* note 37. However, the availability of unpublished decisions in electronic databases exacerbated and highlighted these issues and was a predominant force leading to revision of the rules.

46. *See* Lauren Robel, *The Practice of Precedent:* Anastasoff, *Noncitation Rules, and the Meaning of Precedent in an Interpretive Community*, 35 IND. L. REV. 399 (2002).

47. *See id.*

48. *See id.*

49. FED. R. APP. P. 32.1. In a preface to the publication of Rule 32.1, the Advisory Committee in fact made reference to the notable level of controversy and debate surrounding the issues of non-publication and non-citation: "Needless to say, this is a controversial matter. Many attorneys and bar organizations are strongly opposed to no-citation rules; indeed, Dean Schiltz tells me that no issue has generated more correspondence to the Advisory Committee over the past six years." APPELLATE RULES ADVISORY COMM., JUDICIAL CONFERENCE OF THE U.S., REPORT OF ADVISORY COMMITTEE. ON APPELLATE RULES 27 (2003) [hereinafter REPORT OF ADVISORY COMMITTEE], *available at* http://www.uscourts.gov/rules/app0803.pdf.

50. FED. R. APP. P. 32.1(a).

widespread availability of 'unpublished' opinions on Westlaw and Lexis."[51]

The hearing transcripts regarding the drafting and adoption of Rule 32.1 are an even richer source of comment about the impacts of electronic research. The transcripts are filled with references to the E-Government Act of 2002,[52] which requires all circuits to publish their opinions online and was in the process of being implemented at the time of the hearings, and speculation about the ramifications of online publication with regard to unpublished opinions.[53] The electronic availability of unpublished decisions was repeatedly offered as a counterpoint to concerns that the unique access of institutional actors to unpublished decisions created fairness issues.[54] The ease and ready availability of electronic research was also repeatedly referenced to demonstrate that permitting citations to unpublished opinions would not impose unduly burdensome research obligations on practitioners.[55]

Although not expressly remarked upon, it seems clear that empirical data cited during the testimony was itself likely available in large part because of the electronic availability of decisions. For example, one testifier cited to a study showing "no correlation between a circuit's per-judge workload and the percentage of opinions that the circuit chooses to publish" and to a study showing that, over a two-year span, some "judges published as many as 120 opinions while other judges, also active judges, published as few as 20."[56] Using this data, the testifier concluded that there is "ample room for judges to significantly increase the number of opinions that they publish."[57] Similarly, one cannot help but think that many of the "sky is falling" predictions by proponents of the proposed rule — namely, that unpublished decisions threaten the legitimacy of the judiciary by "send[ing] a message that courts are engaging in results-oriented decision making" and revealing inconsistent decisions[58] — would have been almost nonsensical in a world without the ready electronic availability of unpublished decisions. For in such a world, no one person would have access to enough unpublished decisions to identify any such inconsis-

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51. REPORT OF ADVISORY COMMITTEE, *supra* note 49, at 34.

52. Pub. L. No. 107–347, § 205, 116 Stat. 2899, 2913–15 (codified at 44 U.S.C. § 3501 (2000 & Supp. V 2005)).

53. *E.g.*, MEETING OF THE ADVISORY COMMITTEE, *supra* note 11, at 18–19, 26, 96.

54. *Id.* at 87, 95 (comments of Judah Best).

55. *E.g.*, *id.* at 26 (comments of the Honorable Diane P. Wood) ("[W]ith free Internet access — maybe you'll go to the public library or whatever — every last word coming out of the Courts of Appeals is available to anyone with the skill and the access to navigate these free website, both inside and outside the judiciary."); *id.* at 107–08 (comments of Stephen R. Barnett).

56. *Id.* at 75 (comments of Richard Frankel).

57. *Id.*

58. *Id.* at 69.

tencies or derive from them a view that the judiciary is engaging in rampant "results-oriented decision making."

The adoption of Rule 32.1 provides a particularly good example of a change in the law driven (at least in part) by the new realities of electronic research, but it is not the only one. For example, the recent flux in law school curricula may likewise be influenced by the rise of electronic research. The structure of the West Digest System reflects the seminal first-year curriculum developed by Dean Christopher Columbus Langdell at Harvard Law School and thereafter adopted widely — contracts, torts, civil procedure, criminal law, and property.[59] As described in detail *infra*, Robert Berring and others have argued persuasively that the digest system, once omnipresent as an organizational structure for comprehending and ordering the law, has lost much of its influence with the ascendancy of electronic legal research.[60] After over one hundred years, the traditional Langdellian curriculum likewise appears to be endangered. In 2006, Harvard Law School announced that it was revising its first-year curriculum to reduce class hours devoted to traditional courses and require three new courses on legislation and regulation, international law, and problem solving.[61] That both the West Digest System and the traditional curriculum from which it was derived appear to be waning in tandem with the advent of electronic research is suggestive. The decreased relevance of the West Digest System is arguably a result of the shift to electronic research; the shift to electronic research may also be one factor contributing to recent reforms of law school curricula.

D. Existing Legal Scholarship and Empirical Data

In light of indications that the shift from print-based law to electronic law is likely to have significant impacts, it is unsurprising that a number of legal scholars have considered the influence of digitization

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59. *See* Carol M. Bast & Ransford C. Pyle, *Legal Research in the Computer Age: A Paradigm Shift?*, 93 LAW LIBR. J. 285, 287 (2001) ("The first-year courses Langdell established at the Harvard Law School track the digest classification scheme. The major digest classifications — property, contracts, torts, and crimes — are the subject matter of introductory law school courses. Individual digest topics are the subject matter of other law school courses."); Berring, *Thinkable Thoughts*, *supra* note 11, at 309; Hanson, *supra* note 13, at 570–71.

60. *See infra* notes 92–94, 99–100 and accompanying text.

61. *Rethinking Langdell: Historic Changes in 1L Curriculum Set Stage for New Upper-Level Programs of Study*, HARV. L. TODAY, Dec. 2006, at 1, 5, *available at* http://www.law.harvard.edu/news/today/HLT_Dec.pdf (quoting Dean Elena Kagan's statement that "[o]ver 100 years ago, Harvard Law School invented the basic law school curriculum, and we are now making the most significant revisions to it since that time"); *see also* Jonathan D. Glater, *Harvard Law Decides to Steep Students in 21st-Century Issues*, N.Y. TIMES, Oct. 7, 2006, at A10.

on the law generally and on legal research specifically.[62] These scholars have offered a variety of observations and predictions about the ramifications of the shift to electronic legal research. It has been argued that the shift to electronic research contributes to the demise of the "myth" of the common law by freeing researchers from the limiting influence of case digests and indices,[63] and results in the discovery of a larger number of novel cases and inconsistent authorities, thereby providing evidence for the philosophies of legal realism and critical legal studies.[64] Scholars have also posited that the shift makes it difficult to research abstract concepts and thus encourages an emphasis on

62. *E.g.*, Steven M. Barkan, *Deconstructing Legal Research: A Law Librarian's Commentary on Critical Legal Studies*, 79 LAW LIBR. J. 617 (1987); Bast & Pyle, *supra* note 59; Robert C. Berring, *Chaos, Cyberspace and Tradition: Legal Information Transmogrified*, 12 BERKELEY TECH. L. J. 189 (1997); Robert C. Berring, *Collapse of the Structure of the Legal Research Universe: The Imperative of Digital Information*, 69 WASH. L. REV. 9 (1994) [hereinafter Berring, *The Imperative of Digital Information*]; Robert C. Berring, *Legal Information and the Search for Cognitive Authority*, 88 CAL. L. REV. 1673 (2000) [hereinafter Berring, *The Search for Cognitive Authority*]; Berring, *Where Form Molds Substance*, *supra* note 24; Berring, *Thinkable Thoughts*, *supra* note 11; Robert C. Berring, *On Not Throwing Out the Baby: Planning the Future of Legal Information*, 83 CAL. L. REV. 615 (1995) [hereinafter Berring, *Not Throwing Out the Baby*]; Bintliff, *supra* note 11; Richard Delgado & Jean Stefancic, *Why Do We Ask the Same Questions? The Triple Helix Dilemma Revisited*, 99 LAW LIBR. J. 307, 310 (2007) [hereinafter Delgado & Stefancic, *Triple Helix Dilemma Revisited*]; Richard Delgado & Jean Stefancic, *Why Do We Tell the Same Stories?: Law Reform, Critical Librarianship, and the Triple Helix Dilemma*, 42 STAN. L. REV. 207 (1989) [hereinafter Delgado & Stefancic, *Triple Helix Dilemma*]; Jill Anne Farmer, *A Poststructuralist Analysis of the Legal Research Process*, 85 LAW LIBR. J. 391 (1993); Hanson, *supra* note 13; Paul Hellyer, *Assessing the Influence of Computer-Assisted Legal Research: A Study of California Supreme Court Opinions*, 97 LAW LIBR. J. 285 (2005); Ethan Katsh, *Digital Lawyers: Orienting the Legal Profession to Cyberspace*, 55 U. PITT. L. REV. 1141 (1994); Molly Warner Lien, *Technocentrism and the Soul of the Common Law Lawyer*, 48 AM. U. L. REV. 85 (1998); Lee F. Peoples, *supra* note 11; Peter C. Schanck, *Taking Up Barkan's Challenge: Looking at the Judicial Process and Legal Research*, 82 LAW. LIBR. J. 1 (1990); Jean Stefancic & Richard Delgado, *Outsider Jurisprudence and the Electronic Revolution: Will Technology Help or Hinder the Cause of Law Reform?*, 52 OHIO ST. L.J. 847 (1991); Elizabeth M. McKenzie & Susan Vaughn, *PCs and CALR: Changing the Way Lawyers Think* (Suffolk University Law Sch. Legal Studies Research Paper Series, Working Paper No. 07-31, 2007), *available at* http://ssrn.com/abstract=969078; *see also* KATSH, THE ELECTRONIC MEDIA, *supra* note 24 (assessing the impact of changes in communication on a wide range of legal concepts and activities); M. ETHAN KATSH, LAW IN A DIGITAL WORLD (1995) (considering more broadly the impacts of technology on the legal profession writ large).

63. *E.g.*, KATSH, THE ELECTRONIC MEDIA, *supra* note 24, at 45–46 (describing how electronic research underscores the manipulability of precedent by allowing for the easy location of contrary authority); Berring, *Where Form Molds Substance*, *supra* note 24, at 26 ("[T]he ability to search without an imposed structure will nakedly expose the myth of the common law and the beauty of the seamless web to the general legal world."). *But see* Schanck, *supra* note 62, at 17–19 ("My experiences in performing legal research, in assisting others in their research, and in reading cases lead me to conclude that key numbers, headnotes, indexes, and so forth have had little or no impact on either the content of our law or our understanding of the legal system."); Pantaloni, *supra* note 24, at 699–700 (rejecting the view that print-based indices exerted a strong conforming influence on legal research).

64. Hanson, *supra* note 13, at 580–81; Berring, *Where Form Molds Substance*, *supra* note 24, at 26.

case facts at the expense of principles,[65] leads to "rapid rule extraction" and shallow legal reasoning and analysis,[66] causes judicial opinions to become less cryptic and stylized,[67] and results in greater citation to non-law sources in judicial decisions.[68] Finally, some have argued that the shift replaces existing institutional sources of cognitive legal authority like the National Reporter System and *Shepard's* citators with new, market-selected sources of cognitive legal authority (possibly including search systems themselves),[69] imposes higher standards of conduct that require online searching to assess the adequacy of a lawyer's research,[70] and causes lawyers to specialize.[71]

The majority of these analyses are grounded in: (1) extrapolation from historical shifts in the organization and communication of case law, (2) comparisons between pre- and post-electronic research methods, (3) the personal research experiences of the author or interviews with other researchers, (4) experience gleaned from legal research and writing instruction, and (5) anecdotal observations about how lawyers conduct legal research and use the results.[72]

Empirical testing of predictions about the impacts of the shift to electronic research has been done, but, as discussed below, it has been limited. In a few instances, authors have conducted actual comparative analyses of how legal researchers conduct research using print versus electronic research methods by requiring participants to address questions using print resources or electronic resources and then comparing the results. One study of a group of twenty-eight law students compared their performance in answering fact- and rule-based

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65. Bast & Pyle, *supra* note 59, at 297–98; Bintliff, *supra* note 11, at 345.

66. Lien, *supra* note 62, at 88–90; *see id.* at 126–34.

67. Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1703–04 ("The mummified and stylized prose of today's judicial opinion will become a museum piece.").

68. *Id.* at 1689–91 (citing Frederick Schauer & Virginia J. Wise, *Legal Positivism as Legal Information*, 82 CORNELL L. REV. 1080 (1997) and Frederick Schauer & Virginia J. Wise, *Nonlegal Information and the Delegalization of Law*, 29 J. LEGAL STUD. 495 (2000)); *see also* Hanson, *supra* note 13, at 584–89.

69. Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1705–07.

70. Ellie Margolis, *Surfin' Safari — Why Competent Lawyers Should Research on the Web*, 10 YALE J.L. & TECH. 82 (2007).

71. Berring, *Where Form Molds Substance*, *supra* note 24, at 27; Berring, *Thinkable Thoughts*, *supra* note 11, at 315 (predicting the rise of more specialized, individual expertise).

72. *See, e.g.*, Hanson, *supra* note 13, at 580 (referencing practitioner interview); Schanck, *supra* note 62, at 17–19 (employing anecdotal evidence of the way lawyers tend to conduct research in a critique of prior attempts to assess the impact of electronic research); Lien, *supra* note 62, at 92–93 (reasoning in part from a "survey[ ] [of] those legal skills traditionally associated with technology and [a] consider[ation] of how the newer uses of technology differ" along with an "examin[ation] [of] the uses of technology-based . . . work environments"); *see also* Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1678 ("Very few legal scholars have even thought about these [legal information] issues, and if they do, they find it almost impossible to escape the constraints of their own experience. The way one learns to perform research becomes second nature. It can be put into perspective only with the greatest difficulty.").

questions using print and electronic research methods.[73] The study found, contrary to the prediction that it is harder to research abstract concepts using electronic research, that the students had a slightly better success rate using print resources to answer fact questions and a slightly better success rate using electronic resources to answer rule questions.[74]

A small amount of empirical work has also analyzed the content of written legal materials in an attempt to point out changes from the print research period to the electronic research period. An analysis of 180 California Supreme Court opinions, designed to capture changes in the frequency of citations to various sources over time, indicated that the advent of electronic research had *not* caused that court to cite more cases, to cite to more cases from outside jurisdictions, to cite to recent cases with greater frequency, to cite to more electronic authorities, or to cite to more secondary sources for authority.[75] An analysis of briefs and court decisions involving cases of first impression from the Massachusetts Supreme Judicial Court revealed a drop in the use of analogical reasoning.[76] A third researcher concluded, after comparing judicial opinions contained in Volume 175 of the United States Reports (beginning with cases from October 1899) to opinions contained in the June 29, 1999 issue of United States Law Week, that Supreme Court decisions have, in the age of electronic research, become longer and more convoluted with more frequent citations to sources other than cases and statutes.[77]

These empirical studies have, however, been limited in number and scope.[78] The inquiry into the impacts of electronic research is plagued with a credibility gap. The initial step of the inquiry — un-

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73. Peoples, *supra* note 11, at 668–70.

74. *Id.* at 670–71. The most conclusive finding of the Peoples study related to the law students' attitudes toward research. Students felt strongly that electronic word searches were the most effective research tool and reported feeling more confident more quickly that they had found the correct result when researching using that method — even though, overall, they generated more correct answers using print-based research methods. As summarized by the study's author, "The vast majority of students ranked the print digest at or near the bottom for effectiveness, said it took them a long time to feel confident and satisfied when using it, and found the digest cumbersome and unwieldy to use. . . . For all practical purposes, the print digest is dead to these students before they learn it exists." *Id*. at 674–75.

75. Hellyer, *supra* note 62, at 292–98.

76. McKenzie & Vaughn, *supra* note 62, at 16–17 (finding that in the analyzed sample of briefs from the period between 1956 and 1965, 56.25% employed reasoning by analogy, while only 47.69% of sample of briefs from the period between 1993 and 2003 employed reasoning by analogy).

77. Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1683–91.

78. This is not to suggest any lack of imagination or diligence on the part of those undertaking the research; it instead underlines the challenge of the task and the logistical constraints of undertaking more ambitious empirical studies. As co-authors noted in explaining their decision to narrowly circumscribe their analysis, "We were afraid we would be overwhelmed if we looked at too many variables . . . ." McKenzie & Vaughn, *supra* note 62, at 14.

derstanding and comparing how the mechanics of legal research differ between print-based and electronic research processes — can be studied and set forth in a relatively concrete, analytically rigorous way.[79] However, the subsequent step in the inquiry — ascertaining how the identified changes affect the researcher, the product of research, and the practice of law — depends on far more subjective assessments that frequently boil down to educated guesses based on experience and anecdote.[80] For example, while it is possible to concretely demonstrate the way in which electronic legal research allows the legal researcher to forego the use of case digests, determining how the declining use of case digests bears on the individual researcher's conduct and conclusions is far less susceptible to rigorous analysis.

The important conclusions about the broader impacts of the shift to electronic research have been inhibited from developing the force that they otherwise might have because they rely on this tenuous second step. Many of the conclusions already suggested by those who have addressed this issue scream for a response from the legal community.[81] Scholars, for example, have posited that electronic research is doing no less than "dumbing down" legal reasoning.[82] Yet, the response of the legal community (academic and otherwise) can thus far best be characterized as one of neglect. Electronic research rushes onward, encompassing ever more of the legal research pie and every day more completely defining the experience of the practicing lawyer — with little attention paid to how it affects the practice of law, whether there might be unintended consequences, and what measures might be warranted to manage these consequences.

This Article builds upon prior analyses of the shift to electronic research by offering a new tool — cognitive psychology — for conducting the second step of the inquiry into the impacts of electronic legal research and, by so doing, seeks to provide greater force to the call for better understanding and management of the impacts of electronic legal research. As described in greater detail in Part III, cogni-

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79. *E.g.*, Bast & Pyle, *supra* note 59, at 296–98 (providing a detailed description of the change in the research process from print-based and electronic research).

80. *E.g.*, Lawrence M. Friedman, *Law, Lawyers, and Popular Culture*, 98 YALE L.J. 1579, 1583 (1989) ("[I]f you consider the possible impact of telephones or computers on legal systems, any social theorist will feel sure that there must *be* some impact, and no doubt a substantial impact . . . . But telephones [and] computers . . . do not automatically transform themselves into change in legal rules and legal institutions. If social and technological inventions have an 'influence' (a most slippery concept), that influence must be indirect. At the very least, there must be some intervening steps. Hence any social theory must go beyond the simple-minded equation that joins together particular social and legal events or changes, and find a process or mechanism that *actually* links the two together.")

81. *E.g.*, Berring, *Thinkable Thoughts*, *supra* note 11, at 318 ("Decisions about legal information do not just relate to the format of our information, they relate to the very heart of what we do. . . . This is a call to arms. The legal profession must seize control of its own information destiny.").

82. *See* Lien, *supra* note 62, at 88–89, 126–34.

tive psychology can be used as an analytical tool to better predict and understand how the changes in the research process affect legal researchers and their work.

III. A DETAILED COMPARISON OF PRINT AND ELECTRONIC RESEARCH PROCESSES — IDENTIFYING SALIENT DIFFERENCES

Brief narrative descriptions of basic print and electronic research processes succinctly demonstrate how the shift from print-based research to electronic research alters the mechanics of case research.[83]

Print Sources: Basic case research process[84]

1. Go to the law library.
2. Choose the appropriate case digest.[85]
3. Identify topics and key numbers using the index to the digest or digest topic subjects.[86]
4. Locate and "pull" the hard-copy digest volume(s).
5. Review the case summaries under the identified key numbers.
6. Update the digest.[87]
7. Select cases to physically pull in hard copy from the case reporter volumes.
8. Physically locate and pull the reporter volume for each case to be retrieved.
9. Locate each case within the reporter volume by turning to the correct page.

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83. There are innumerable idiosyncrasies, short-cuts, and alternate approaches to conducting print and/or electronic case research. Moreover, today's researchers may use a hybrid electronic/print-source approach. The following descriptions purport only to illustrate a generic print search and a generic electronic search and capture some basic differences between print and electronic research.

84. The description that follows is summarized from AMY E. SLOAN, BASIC LEGAL RESEARCH 82–86 (2d ed. 2003).

85. Digests are limited by jurisdiction and date range. *West's Federal Practice Digest, Fourth Series*, includes summaries of cases from all federal courts from the 1980s to the present (prior series in the set include older cases); *West's Supreme Court Digest* includes summaries of cases from the United States Supreme Court; state digests include summaries of cases from the state's courts and the federal courts within the state; regional digests include summaries of cases arising from all state courts within the relevant region; and combined digests include summaries of state and federal cases from all U.S. jurisdictions (over approximate 5-year intervals).

86. The case digests organize case summaries by subject categories, called "topics," of which there are over 400. These "topics" are then subdivided further into West key numbers, of which there are approximately 100,000.

87. This requires (1) checking the pocket part for the subject volume covering the topic; (2) checking the separate set of interim pamphlets at the end of the digest set; (3) reviewing the closing table; (4) pulling any reporters not yet incorporated into the digest updates; and (5) checking the "mini-digest" at the end of the reporter.

10. Memorialize useful search results (for example, by taking notes or making photocopies of the reporter pages).
11. Shepardize useful cases.[88]

Electronic Database: Basic case research process

1. Log in to a legal database from a computer terminal.
2. Choose a case database to search.
3. Enter search terms and run a search.
4. Click through hits.[89]
5. Refine search if necessary.
6. Memorialize useful search results (for example, by saving or printing cases, taking notes, cutting and pasting retrieved content).
7. Click to Shepardize.

A close comparison of the processes of print-based case research and electronic case research[90] reveals at least three basic changes that are salient for understanding the broader non-process impacts of the shift to electronic research: (1) electronic researchers are not guided by key system information[91] to the same extent as print researchers with respect to identifying relevant theories, principles, and cases;[92]

88. This requires (1) locating the correct set of *Shepard's* volumes for the reporter; (2) locating the particular volume and update booklets and pamphlets from the applicable *Shepard's* set; (3) locating the entry for the case within each volume; (4) interpreting the entries (entries include alphabetical and numerical descriptors that correspond to history codes, treatment codes, etc.); and (5) identifying any cases that need to, in turn, be physically located and reviewed.

89. This may include clicking into sources beyond the cases retrieved by the initial search — for example, cases referenced within the cases retrieved by the initial search and suggested secondary source materials.

90. While the advent of electronic research also gives rise to changes in the way researchers locate and access other sources of law, *see, e.g.*, Peter W. Martin, *The Internet: "Full and Unfettered Access" to Law — Some Implications*, 26 N. KY. L. REV. 181, 194 (1999) (discussing impacts from the digitization of agency materials), this Article will focus narrowly on case research both in an effort to limit the scope of the inquiry and out of recognition that case research is a basic research exercise. *See generally* Berring, *The Imperative of Digital Information*, *supra* note 62, at 12 ("[O]n the practical level theorists continue to parse and analyze cases in much the same manner as their forebears. Therefore the practice of law has continued to lean heavily on finding, reading, and relating cases. The profession's obsession with tying cases together has not abated."); Bintliff, *supra* note 11, at 341 ("[I]t is in the written decisions of the judicial branch that the law, whether statutory, administrative, or common law, is explained and interpreted. . . . Because the use and understanding of court decisions is so fundamental to the practice of law, I am concentrating on them as I discuss the impact of computers on legal thinking.").

91. By "key system information," I mean key topics, key subjects, key numbers, and case digest blurbs, including other information contained in the case digests.

92. Other authors, first and most notably Robert Berring, have previously explained that electronic researchers are less guided by key system information. Berring, *The Search for Cognitive Authority*, *supra* note 62; Richard A. Danner, *Legal Information and the Development of American Law: Writings on the Form and Structure of the Published Law*, 99

(2) electronic researchers do not encounter and interpret individual cases through the lens of key system information to the same extent as print researchers; and (3) electronic researchers are exposed to more — and different — case texts than print researchers. Each of these changes is described in greater detail below.

A. Electronic Researchers Are Not Guided by Key System Information to the Same Extent as Print Researchers with Respect to Identifying Relevant Theories, Principles, and Cases.

Access to cases in a print-only world was largely controlled by case digests and indices (and by the key topics and subjects contained therein). It is impossible to walk into a library full of bound, chronological case volumes and peruse those volumes directly to locate relevant cases in any remotely efficient way. Some retrieval tool is needed to allow the researcher to identify cases relevant to her inquiry. In the print-only world, case digests and indices were the dominant retrieval tool. Indeed, one author observes that legal indexing systems "establish a virtual conceptual tyranny over access."[93] They were such an indispensable retrieval tool that, as Robert Berring has argued persuasively, the National Reporter System, the West Digest System, and *Shepard's* citators all achieved a high level of cognitive authority. "One of the fascinating features of these systems of information was the depth of respect they commanded. Sanctioned neither by legislative enactment nor by judicial decree, the National Reporter System, the Digest System . . . and Shepard's citators nevertheless embedded themselves in the collective legal consciousness."[94]

There are other ways to locate cases in print, particularly by working backward from a discovered case or secondary source such as a practice guide or treatise. However, even methods of locating cases that do not *start* in a digest or index frequently use those tools at some point. For example, a researcher who begins with one on-point case may use key numbers from that case to locate other relevant cases or simply augment the search using a digest. Additionally, many

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LAW LIBR. J. 193 (2007) (describing the influence of Berring's work, particularly with respect to his observations about the import of the digest system). I do so again here to inform the analysis that follows and to respond to other authors' assertions that key topics and numbers are not integral to print research. *See* Pantaloni, *supra* note 24, at 699–700 (rejecting the view that print-based indices exert a strong conforming influence on legal research); *see also* Schanck, *supra* note 62, at 17–19.

93. Farmer, *supra* note 62, at 399.

94. Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1680–81. *See also* Bast & Pyle, *supra* note 59, at 287 ("Digests are a meme vehicle because their conservative organizational structure has facilitated the replication of legal concepts in successive generations of case law. In addition, the digest classification scheme is learned by successive generations of law school students; this comprehensive classification of the law underlies the attorney's approach to the law.").

oft-used secondary sources are modeled on the digest system and reflect its organization.

As described above, in a paradigmatic print search the researcher chooses the appropriate case digest. She then uses the digest to identify potentially relevant topics and key numbers in the index. The researcher, armed with knowledge of the inquiry or problem to be solved, then peruses these topics and key numbers and makes judgments about which are "matches" with the research question. Those researcher-identified matches determine which cases (or at least the first cut of cases) the researcher reviews to find a solution to the problem or inquiry. In this way, the digests, along with their topic and key numbers, inexorably guide and influence the researcher's identification of theories, principles, and cases.

The researcher plays an active role in making matches between the research question and the topics and key numbers. Researchers may make such a match even before looking at the topics and key numbers. For example, a researcher may look at a set of facts and have prior knowledge that the issue presented involves the Statute of Frauds and accordingly look up that term in the subject digest. On the other hand, in what has been described as "serendipity"[95] in the print research process, researchers may, through the act of browsing tables of contents and the digest itself, derive unexpected matches.

However, even though the researcher plays an active role in using these retrieval tools, the digests, topics, and key numbers are nonetheless guiding the research process. First, any preconceived notion that a researcher brings to the search will only bear fruit if the principle, theory, or term is one that the digest also uses and identifies with the same terminology. For example, a researcher who looks at a set of facts or legal problem and concludes that the relevant theory is "coconut disaggregation" is not going to be able to use that term to navigate the digest because the digest does not recognize it. Similarly, any "serendipity" is limited to principles, theories, and subjects recognized by the case digest. Moreover, within a broad topic, such as the Statute of Frauds, the researcher will be guided to narrower subtopics, principles and cases using the information contained in the digest. Finally, once a researcher has located a subject or key topic/number that she thinks is a good match, the researcher then relies on the digest case descriptions to decide which cases to pull. Thus, in a print-based search, both the research process and the results it yields will frequently be informed and influenced by the case digests and key topics/numbers.

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95. Bintliff, *supra* note 11, at 342–43 ("Sometimes the best digest research was the result of serendipity. Something seen out of the corner of an eye suddenly inspired a thought-provoking argument.").

The paradigmatic electronic research process, on the other hand, is emancipated from the case digest and key topics/numbers. The researcher selects, or even invents, the criteria that she thinks will be most useful for identifying relevant cases. The researcher can attempt to use any idea (even "coconut disaggregation") that she brings to the research question as a tool to identify potentially relevant cases and can swiftly and quickly experiment with different criteria.[96]

That key topics/numbers *need* not be used does not, of course, mean that they *cannot* be used as part of an electronic search. However, for the reasons that follow, key system information is less likely to be used and, even if used, this information is less likely to be as determinative in the context of an electronic search. First, the evidence suggests that the generation of attorneys who have grown up with the availability of electronic research are unlikely to use print sources often enough to develop a familiarity with the digest/key system and are likely to rely exclusively on electronic research.[97] Second, it is still relatively unwieldy, slow, and difficult to use key numbers in online searching, especially without prior familiarity with the key number system.[98] Third, the key number system is not available on many of the free public-access databases. Finally, even when used as part of an electronic search, key numbers do not direct the research process as decisively as they do in a world limited to print sources. A researcher may, for example, use her own search terms in tandem with the key number, thereby putting a personal spin on searching divorced from the key system. Thus, to the extent that key topics and numbers guide online searches they do so with far less frequency and far less influence than in print-limited research.

One marked difference, then, between print-only and electronic research is the diminished influence of case digests and key topics/numbers on the search process. The print research process caused "[g]enerations of lawyers . . . to conceptualize legal problems using the categories of the Topics and Key Numbers of the American Digest System."[99] In a print-only research world, "[t]he categories established by the digest system were deeply ingrained. Even if one could only stumble along, the ruts were deep and easy to follow."[100] Elec-

96. *See* Hanson, *supra* note 13, at 598 ("There is no intrinsic organization or order to the way in which the millions of such items [cases or journal articles] are stored in electronic databases. What sites, cases, or articles emerge depends entirely on the user's search strategy. Even when search engines rank the relevance of the various hits, it is an ad hoc evaluation made with reference to the specific search query rather than a reflection of some permanent, underlying, hierarchical structure . . . .").

97. *See* Peoples, *supra* note 11, at 670–74.

98. *See id.* at 675 (observing, after conducting an empirical test of student searching, that "KeySearch was not shown to be a tool that successfully integrated the structure of the print digest into the electronic environment").

99. Berring, *The Search for Cognitive Authority*, *supra* note 62, at 1693.

100. *Id.* at 1694.

tronic searchers, on the other hand, can readily and effectively search without ever referencing a digest or learning what key topics/numbers have been assigned to the cases that they recover.

B. Electronic Researchers Do Not Encounter and Interpret Individual Cases Through the Lens of Key System Information to the Same Extent as Print Researchers.

Using case digests and key numbers/topics to locate cases influences not only the way in which a researcher identifies relevant doctrines, principles, and cases, but also the information that a researcher has about a case before reading its text. Before seeing the first word in the text of a case, a researcher undertaking a paradigmatic print-based search will be exposed to all of the following information about the case: (1) a statement about the subject matter category into which the case falls; (2) a statement about the principle of law for which the case is indexed; and (3) a short summary of the case with respect to that principle.

During a typical electronic word search, on the other hand, a researcher will likely receive far less information about a case prior to reading its text.[101] Usually, the only immediate information that an electronic researcher will have about a case (before being exposed to the case text) is that it meets the criteria of her individually crafted search. This is because electronic search results are frequently listed with the case citation followed by a short snippet of text from the case highlighting where in the case the searched-for terms appear. Researchers are invited to jump directly into not just the case text, but the section of the case text deemed most responsive to the search terms.[102]

Thus, although electronic researchers *may* have some exposure to a key topic/number before reading case text, that exposure is not required for the researcher to find the case or the relevant text within the case and is likely to be fleeting. Further, the case researcher has no need to analyze the information in order to efficiently structure her search. A print researcher, on the other hand, must not only read and understand the key system information, but has quite a bit invested in doing so correctly. While a false step in electronic research may cost only seconds and be rectified with a click, locating useless cases in a

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101. *See generally* Bast & Pyle, *supra* note 59, at 297 (demonstrating through a comparison of the print and electronic research processes that print researchers are far more likely to consult secondary sources before being exposed to primary sources).

102. Of course, electronically stored cases do include key number headings and snippets of these headings may produce a hit to search terms, and a researcher may view these headings once clicking into the case text. Notably, however, a key feature of these headings is that they permit the researcher to click on the heading in order to jump directly to the relevant portion of the case text.

print-based search is time-consuming and energy-intensive. The researcher has to locate the relevant reporter volume, find the case at the correct page within the reporter, and then flip to the correct section of the case without the benefit of hyperlinks. These differences in the research process mean that, as a general matter, electronic researchers do not encounter and interpret individual cases through the lens of key system information (key topics/numbers, digest blurbs) to the same extent as print researchers.

C. Electronic Researchers Are Exposed to More — and Different — Case Texts than Print Researchers.

As described above, the time and energy costs of obtaining the text of a case for review after it has been identified as a case of interest are higher for a print researcher (locating and physically pulling the reporter, flipping to the proper page) than for an electronic researcher (scanning the text excerpted on the search results page or clicking into a retrieved case).[103] Additionally, the costs of memorializing reviewed cases are higher for the print researcher. The print researcher must photocopy or take notes as opposed to printing, saving on the computer, or cutting and pasting portions of case text directly into notes or drafts. For these purposes, a distinction between *cases* and case *texts* is critical. Print researchers may well be exposed to more *cases* in the form of digest blurbs, but the value of print retrieval tools is precisely that they relieve the researcher from needing to review a large number of case *texts* directly in order to identify relevant precedent.

The heightened time and energy costs for case-text retrieval during print searches do not dictate that print researchers will always review less case text. However, the assertion that, as a general matter, electronic researchers will be exposed to more case text during the course of research gains force when this cost differential is considered in light of other factors.

Consider that the initial results page for just one electronic search will contain the excerpted text of *twenty* different cases. In the span of three minutes or so, an electronic researcher can scan the excerpted text of these twenty cases to identify relevant results.[104] Each new

103. *See* Bast & Pyle, *supra* note 59, at 290–91 (identifying as a disadvantage of the key number system the fact that it is time-consuming because "a researcher looking for a case first must locate the correct topic and then follow through all the layers in the outline before locating the case on point.").

104. Even good searches are unlikely to yield only relevant results and researchers may need to create overbroad searches to ensure that they have located relevant cases; thus, some portion of the retrieved results are likely to be anomalous and require the researcher to screen results for relevancy. *See* Robert C. Berring, *Full-Text Databases and Legal Research: Backing into the Future*, 1 HIGH TECH. L.J. 27, 43–50 (1986) (describing the tension between "precision" and "recall").

page in the result list provides twenty additional case-text excerpts, and each new search produces a new result list, and so on. Moreover, an electronic researcher can fly between hyperlinked cases within a search result with amazing ease. For example, an initial search might return case A; while scanning the text of case A, the researcher sees a citation to case B; with a click, the researcher speeds directly into the text of case B. This presents a stark contrast to the time and energy required for a print researcher to locate and review a portion of the text of twenty different cases or to look up a case referenced in a retrieved case.

This Article focuses on time/energy costs as opposed to monetary costs. Searching in private electronic databases can be expensive and many have raised concerns about the distributional consequences of expensive electronic research.[105] However, for the purposes of the present discussion, time/energy costs seem to be the more appropriate metric for a number of reasons. Large firms can frequently pass the cost of private database searching onto clients.[106] Even smaller firms increasingly have options for lower cost access to electronic databases. "Lexis and Westlaw both have modified versions of their databases that are priced for the small firm and solo practitioners market," and there is increasingly a "range of competitors in the low end of the market in terms of pricing."[107]

Moreover, there are numerous strategies for resource-limited researchers to conduct cost-effective searches in electronic databases. For example, if the charge is by search, a researcher can run one overbroad search and then merely click around within retrieved results without incurring additional charge.[108] If the charge is assessed hourly, a researcher can download and save a broad search result and peruse it at length without additional charge.[109] Case law is available from a number of free online collections and databases, such as FindLaw,[110] the Cornell University Legal Information Institute,[111] and many courts (spurred in part by Section 205 of the E-Government Act).[112] And, finally, the cost of using a private electronic database must be compared to the costs generated by an attorney billing by

105. *E.g.*, Olufunmilayo B. Arewa, *Open Access in a Closed Universe: Lexis, Westlaw, Law Schools, and the Legal Information Market*, 10 LEWIS & CLARK L. REV. 797 (2006); Berring, *Not Throwing Out the Baby*, *supra* note 62, at 618–29.

106. Arewa, *supra* note 105, at 829–30.

107. *Id.* at 831.

108. *See id.* (describing various fee arrangements, including transactional, hourly, or fixed cost basis).

109. *See id.*

110. FindLaw, http://www.findlaw.com/ (last visited Dec. 19, 2008).

111. Legal Information Institute at Cornell Law School, http://www.law.cornell.edu/ (last visited Dec. 19, 2008).

112. Pub. L. No. 107–347, § 205, 116 Stat. 2899, 2913–15 (codified at 44 U.S.C. § 3501 (2000 & Supp. V 2005)).

hour. Thus, even for a resource-limited attorney, an expensive electronic search may nonetheless be more economical than a print search if it saves attorney time.

The explanation for how and why electronic researchers are likely to be exposed to *more* case texts leads to a second and related assertion, namely that electronic researchers are more likely to be exposed to *different* case texts than print researchers. This captures two ideas: (1) a print researcher and an electronic researcher, setting out with the same research inquiry, are likely to exhibit greater divergence with respect to case texts reviewed; and (2) two electronic researchers, setting out with the same research inquiry, are likely to exhibit greater divergence with respect to case texts reviewed as compared to one another than two print researchers presented with the same research inquiry. There are two reasons for this.

First, there is a higher time/energy penalty for pursuing a false lead during print research than during electronic research. Consequently, we would expect a print researcher to be more discerning when screening for relevant results. For an electronic researcher, going off on a bit of a wild goose chase will pose few time/energy costs. Thus, a print researcher faced with a case digest excerpt for a case that suggests that it has a 10% chance of being relevant to the researcher's inquiry and an electronic researcher faced with a case-text excerpt likewise suggesting a 10% chance of relevancy could be expected to make different decisions about the utility of tracking down the case. In short, it is reasonable to expect that frolics and detours would be far more common in the context of electronic research. These frolics and detours might include forays into, for example, marginally related areas of law or non-controlling jurisdictions.

The second and more important reason that print and electronic researchers will likely be exposed to different case texts lies in the homogenizing influence of case digests and key system information as compared to the more individualized nature of electronic searching.[113] As described above, a print researcher will frequently decide which case texts to pull and review using a case digest as the guiding tool. The digests, key topics/numbers, and case blurbs influence both the category of cases that the researcher deems relevant and the specific case texts that the researcher chooses to review. The case texts that an electronic researcher will be exposed to are determined by the search that the researcher elects to run. And the searches that electronic researchers run are highly individualized. Searches can be structured in

113. *See* Hanson, *supra* note 13, at 580 ("[W]hen everyone utilized the West key number system and other pre-automated research techniques, opposing attorneys would tend to develop their arguments on the basis of the same cases, nearly all of which were familiar to judges and experts in that field of law. Automated research, with its open-ended quality and potential to be highly customized, is more likely to turn up a number of novel cases that, it could be argued, should be considered as precedent for the case at hand." (citation omitted)).

different ways (for example, as "Natural Language" or "Terms and Connectors" searches)[114] and the researcher has complete control over search content. These electronic searches almost always yield at least a handful of wholly irrelevant results that are entangled in the net cast by the search. Significantly, these results are case texts that a print researcher would not likely encounter unless a key number was erroneously assigned or a case digest excerpt was inaccurate (or misinterpreted by the researcher).

IV. COGNITIVE PSYCHOLOGY-DERIVED PREDICTIONS ABOUT THE CONSEQUENCES OF A CHANGED RESEARCH PROCESS: DIVERSITY IN FRAMING AND TILTING AT WINDMILLS

A close comparison of the electronic and print research processes thus reveals some fundamental differences: (1) electronic researchers are not guided by key system information to the same extent as print researchers with respect to identifying relevant theories, principles, and cases; (2) electronic researchers do not encounter and interpret individual cases through the lens of key system information to the same extent as print researchers; and (3) electronic researchers are exposed to more — and different — case *texts* than print researchers. Merely identifying these differences without more sheds little illumination on the broader question: Will these changes have ramifications outside of the legal research process itself? Cognitive psychology provides a useful analytical tool to suggest answers to these questions.

A. Principles and Theories of Cognitive Psychology

Over the last twenty years, legal scholars have employed cognitive psychology to inform a great number of legal analyses, perhaps most importantly in the behavioral law and economics movement.[115] Cognitive psychology has been used to examine everything from the appropriate scope of consumer warranty disclaimers[116] to the behavior of juries.[117] Although cognitive psychology has mainly been applied to the lay public (as consumers or subjects of the law), judges, or ju-

114. LexisNexis Support Center, Natural Language Description, http://support.lexisnexis.com/online/record.asp?ARTICLEID=FREESTYLE (last visited Dec. 19, 2008); LexisNexis Support Center, Terms and Connectors, http://support.lexisnexis.com/online/record.asp?ARTICLEID=GS_Boolean (last visited Dec. 19, 2008).

115. *See, e.g.*, Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998); Cass R. Sunstein, *Human Behavior and the Law of Work*, 87 VA. L. REV. 205 (2001).

116. Daniel A. Farber, *Contract Law and Modern Economic Theory*, 78 NW. U. L. REV. 303, 329–33 (1983).

117. *E.g.*, Jason D. Reichelt, *Standing Alone: Conformity, Coercion, and the Protection of the Holdout Juror*, 40 U. MICH. J.L. REFORM 569 (2007).

ries, some scholars have used cognitive psychology to better understand and predict the behaviors of attorneys in practicing the law.[118] There are a few basic principles and theories in cognitive psychology that seem particularly useful in understanding the significance of the differences in the research process described in Part II.[119] These are described briefly below.[120]

1. Influence of Labeling

Affixing a label or title to text can significantly influence understanding of the text's meaning.[121] Cognitive psychology teaches that existing knowledge greatly shapes understanding and "allows us to make new inferences that are crucial to our understanding."[122] Because people accumulate so much knowledge, what becomes relevant in any particular instance "is not total knowledge . . . but rather the knowledge that the reader *brings to bear* in understanding."[123] And labels or a title can work as triggers, determining what knowledge the reader brings to bear upon a particular text, thereby significantly shaping understanding.

To illustrate the power of labeling, consider the following paragraph:

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118. *E.g.*, Gary L. Blasi, *What Lawyers Know: Lawyering Expertise, Cognitive Science, and the Functions of Theory*, 45 J. LEGAL EDUC. 313 (1995) (analyzing attorney decision-making using principles of cognitive psychology); Alafair S. Burke, *Improving Prosecutorial Decision Making: Some Lessons of Cognitive Science*, 47 WM. & MARY L. REV. 1587 (2006) (using cognitive psychology to assess prosecutorial behavior); Joseph W. Rand, *Understanding Why Good Lawyers Go Bad: Using Case Studies in Teaching Cognitive Bias in Legal Decision-Making*, 9 CLINICAL L. REV. 731 (2003) (recommending the use of case studies to train law students to avoid cognitive errors in decision-making); Mark Seidenfeld, *Cognitive Loafing, Social Conformity, and Judicial Review of Agency Rulemaking*, 87 CORNELL L. REV. 486, 524 (2002) (using principles of cognitive psychology to assess the utility of judicial review to agency rulemaking); Ian Weinstein, *Don't Believe Everything You Think: Cognitive Bias in Legal Decision Making*, 9 CLINICAL L. REV. 783 (2003) (discussing the impact of cognitive bias on both lawyers and clients, particularly in the context of settlement/plea decisions).

119. This discussion of cognitive psychology is grounded in basic principles of cognitive psychology, primarily as outlined in DOUGLAS L. MEDIN ET AL., COGNITIVE PSYCHOLOGY (4th ed. 2005).

120. Molly Warner Lien briefly references cognitive learning theory in describing the intersection between technology and learning styles to provide support for the view that use of electronic media discourages nuanced understanding and analysis of case law. Lien, *supra* note 62, at 118–26. Lien explains: "[W]orking methods that allow lawyers and students to input now and think later may be harmful to those who give in to the temptation. The person who uses an infobase to cut and paste portions of a case text into a brief is rearranging the thoughts of others, rather than reading 'closely, critically, and multiperspectively.'" *Id*. at 121–22. (quoting Elizabeth Fajans & Mary R. Falk, *Against the Tyranny of Paraphrase: Talking Back to Texts*, 78 CORNELL L. REV. 163, 181 (1993)).

121. *See* MEDIN ET AL., *supra* note 119, at 213.

122. *Id.* at 211.

123. *Id.* at 212.

> The procedure is actually quite simple. First you arrange things into different groups. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities that is the next step, otherwise you are pretty well set. It is important not to overdo things. That is, it is better to do too few things at once than too many. In the short run this may not seem important but complications can easily arise. A mistake can be expensive as well. At first the whole procedure will seem complicated. Soon, however, it will become just another facet of life. It is difficult to foresee any end to the necessity for this task in the immediate future, but then one never can tell. After the procedure is completed one arranges the materials into different groups again. Then they can be put into their appropriate places. Eventually they will be used once more and the whole cycle will then have to be repeated. However, that is part of life.[124]

Now imagine that you were given the same paragraph but with a title this time — "Washing Clothes." You can readily understand the information when a label is affixed. Experimental data indicates that readers who are provided with both the paragraph and its title develop a better understanding of the text than readers provided with the same paragraph sans title.[125] Although everyone knows how to wash clothes, it is only when that knowledge is activated by the title that it shapes understanding of the passage.

2. Influence of Categories

Categorization is a basic and pervasive cognitive function that permits people to utilize prior experience. The way that items or concepts are categorized can significantly influence how they are understood. "[C]ategorization can both exaggerate (between-category) differences and inappropriately minimize (within-category) differences."[126] Bundling items or concepts into one category gives rise to the perception that those items or concepts are similar to one another and distinguishable from items or concepts in a different category. By way of example, consider the set of drawings below:

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124. John D. Bransford & Marcia K. Johnson, *Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall*, 11 J. VERBAL LEARNING & VERBAL BEHAV. 717, 722 (1972), *quoted in* MEDIN ET AL., *supra* note 119, at 213.

125. MEDIN ET AL., *supra* note 119, at 213.

126. *Id.* at 322–23.

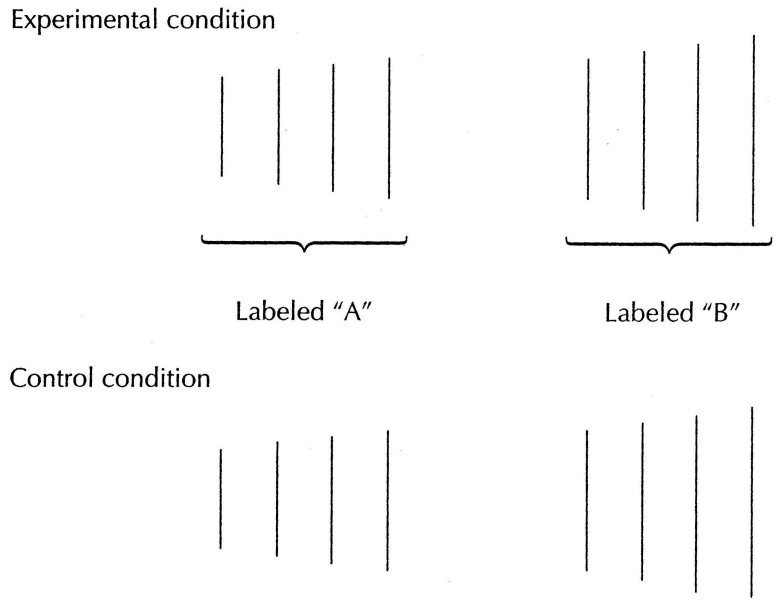

Figure 1: Tajfel and Wilkes 1963 Study[127]

In a 1963 study conducted by Tajfel and Wilkes, participants were asked to estimate the lengths of lines with and without category labels.[128] Half the participants were shown two sets of lines without category labels and half were shown the same two sets of lines with category labels (four short lines labeled "A" and four longer lines labeled "B").[129] Participants shown category labels described the lines within category A as more similar in length and reported a greater difference in line length between the category A and B lines.[130] "In other words, the labels made the examples within a category more similar and the differences across categories more distinctive."[131]

127. *Id.* at 321.
128. *Id.* at 320–21 (citing Henri Tajfel & A.L. Wilkes, *Classification and Quantitative Judgment*, 54 BRIT. J. PSYCHOL. 101, 101–14 (1963)).
129. *Id.*
130. *Id.*
131. *Id.* at 321.

3. Confirmatory Bias and Selective Information Processing

Cognitive psychology instructs that people are biased in the way that they seek out and digest information.[132] Once people form a hypothesis about a possible solution to a problem, they have a notable tendency to seek out information that supports the hypothesis — to the exclusion of information that might contradict it.[133] Moreover, people tend to minimize the importance of information if it appears to contradict a preexisting hypothesis or belief but emphasize the information if it appears to support the hypothesis or belief.[134]

In one experiment demonstrating these effects, psychologists assembled subjects with differing beliefs about a controversial subject, such as whether marijuana use poses health risks.[135] The subjects were given summaries of a series of studies with mixed results and conclusions about marijuana's health impacts.[136] After the study, the psychologists again measured the subjects' views about the health risks of marijuana.[137] Notably, even though the subjects had been provided with the same balanced scientific information (that ostensibly should have tempered their respective viewpoints), they not only persisted in their original beliefs but did so with greater zeal.[138] Subjects who entered the study believing that marijuana was not harmful were even more convinced of its benign nature, and subjects who entered the study believing that marijuana has serious health impacts were even more convinced of its harmful effects. "Apparently, people tended to see flaws in the studies whose results did not fit their views and did not see any problems with the studies that supported their views."[139]

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132. *Id.* at 12, 383–86.

133. *Id.* at 384–85 (citing P.C.Wason, *On the Failure to Eliminate Hypotheses in a Conceptual Task*, 12 Q. J. EXPERIMENTAL PSYCHOL. 129 (1960)).

134. *Id.* at 12, 384–86.

135. *Id.* at 12 (citing L. Ross, M.R. Lepper & M. Hubbard, *Perseverance in Self-Perception and Social Perception: Biased Attributional Processes in the Debriefing Paradigm*, 32 J. PERSONALITY & SOC. PSYCHOL. 880 (1975); L. Ross, *The Intuitive Psychologist and His Shortcomings: Distortions in the Attribution Process*, *in* ADVANCES IN EXPERIMENTAL PSYCHOLOGY 174 (L. Berkowitz ed., 1977)).

136. *Id.*

137. *Id.*

138. *Id.*

139. *Id.* at 12. Of note, there is a large body of work examining and explicating the basic theory of confirmation bias as described here; questions include whether the bias persists outside of the context of simple tasks presented under laboratory conditions. *See* BRANT A. CHEIKES ET AL., MITRE CORP., CONFIRMATION BIASES IN COMPLEX ANALYSES (2004) ("[I]t appears that complex analysis tasks are subject to . . . confirmation bias."), *available at* http://www.mitre.org/work/tech_papers/tech_papers_04/04_0985/04_0985.pdf, and whether and under what circumstances different factors may mitigate or amplify the bias, *see* Mark Seidenfeld, *Cognitive Loafing, Social Conformity, and Judicial Review of Agency Rulemaking*, 87 CORNELL L. REV. 486, 524 (2002) (citing David Sanbonmatsu et al., *Overestimating Causality: Attributional Effects of Confirmatory Processing*, 65 J. PERS. & SOC. PSYCH. 892, 897 (1993)) (observing that confirmation bias may be amplified by accountability but mitigated where individuals are told to evaluate alternative hypotheses).

B. Application of Cognitive Psychology Principles to Legal Research

These principles of cognitive psychology suggest that the differences between the print and electronic research process will change not only how lawyers access the "literature of their profession,"[140] but also what they find upon accessing that literature and what they make of it. The key system and other print retrieval aids provide value precisely because they label and categorize information for the researcher. Case digests, for example, situate cases for researchers within defined categories (topics, key subjects) and then label those cases with key numbers and descriptions indicating the point of law for which they stand. And even though print and electronic researchers alike may be subject to confirmatory bias, electronic researchers will not only access more case texts (upon which to exercise such bias) but they will do so without the mediating influence of key system information to check that bias.

As noted in Part II.D, a number of other authors have thought carefully about the likely impacts of the shift to electronic research.[141] This Article seeks to add to that work the predictive value of established principles of cognitive psychology. Taking into consideration the differences between the print and electronic research processes, together with the principles of cognitive psychology, this Article makes two predictions about significant non-process consequences of the shift to electronic research: increased diversity in framing and tilting at windmills.

1. Diversity in Framing

The term "framing" is used here to reference an attorney's selection of the legal theory or theories through which to conceptualize facts, arguments, and cases. The phrase "diversity in framing" captures the idea that attorneys working from the same or similar set of case facts may identify disparate legal theories as applicable to the case, proceeding, or motion.[142] Considering the changes in the research process and principles of cognitive psychology, the shift to electronic research will likely result in greater diversity in framing.

Framing occurs throughout the legal process. It occurs when an attorney first considers whether a client has a claim and, if so, what

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140. PRICE & BITNER, *supra* note 7, at 1.

141. *See* sources cited *supra* note 62.

142. However, divergence does not mean that the frames proposed by attorneys will necessarily be novel or innovative. *See* Richard Delgado & Jean Stefancic, *Triple Helix Dilemma Revisited*, *supra* note 62, at 318–24 (arguing that electronic research stifles new ideas and true creativity for a number of reasons, including by emphasizing facts over abstract ideas, the internalization of key system categories, and reduced opportunities for "conceptual browsing").

kind.[143] It occurs when an attorney decides what claims to include in a complaint and when opposing counsel decides whether to bring a motion to dismiss or a motion for summary judgment and, if so, on what grounds. It occurs when an attorney decides which legal theories to raise in response to a motion to dismiss or a motion for summary judgment or on appeal.

The way that a case or argument is framed can dictate its outcome.[144] On a grand scale, consider, for example, challenges to the constitutionality of the United States Sentencing Guidelines.[145] The Guidelines went into effect in November 1, 1987. The first constitutional challenge to the Guidelines was decided by the Supreme Court in 1989.[146] The Guidelines were thereafter upheld against a host of constitutional challenges, including challenges brought under the nondelegation doctrine,[147] separation of powers doctrine,[148] the privilege of the accused to testify on her own behalf,[149] and the Double Jeopardy Clause.[150] It was not until 2000, 2004, and 2005 that the Supreme Court finally held the application of the Guidelines largely unconstitutional, relying on the Sixth Amendment right to a jury trial.[151] This example underlines the importance of framing the question, "Are the U.S. Sentencing Guidelines unconstitutional?"

One conclusion that can be drawn from considering the differences between the print and electronic research processes alongside principles of cognitive psychology is that electronic researchers will be more likely to diverge with respect to framing. In broad terms, greater divergence is likely because print researchers are guided by key topics, numbers, and case digest blurbs to a far greater extent than electronic researchers when selecting cases to review and in reviewing

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143. The experience of Neal Katyal, lead architect of the challenge to military tribunals in *Hamdan v. Rumsfeld*, 548 U.S. 557 (2006), provides an example of framing: "Katyal spent two and half years working on a brief about separation of powers until a fresh-faced student looked at the problem from an angle Katyal himself had not considered. 'Here comes a student, with little prior knowledge, and he has a different way of looking at it . . . .'" Kaitlin Thomas, Hamdan v. Rumsfeld: *Neal Katyal Leads Students from Guantánamo to the Supreme Court*, YALE L. REP., Summer 2006, at 37, 40.

144. *See generally* Marcia L. McCormick, *Selecting and Framing the Issues on Appeal: A Powerful Persuasive Tool*, 90 ILL. B.J. 203 (2002) (providing examples where the way in which an appeal was framed influenced the outcome and observing that "the framework of the argument itself — the theory of the case and the way the issues are framed — is a powerful persuasive tool. . . . The framework can control the outcome of the case because it funnels the facts toward a specific conclusion.").

145. *See* 18 U.S.C. §§ 3551–3559 (2006); UNITED STATES SENTENCING COMMISSION, GUIDELINES MANUAL (2007), *available at* http://www.ussc.gov/2007guid/GL2007.pdf.

146. Mistretta v. United States, 488 U.S. 361 (1989).

147. *Id.*

148. *Id.*

149. United States v. Dunnigan, 507 U.S. 87 (1993).

150. Witte v. United States, 515 U.S. 389 (1995).

151. United States v. Booker, 543 U.S. 220 (2005); Blakely v. Washington, 542 U.S. 296 (2004), Apprendi v. New Jersey, 530 U.S. 466 (2000).

those cases.[152] The key system labels and categorizes legal topics and ultimately the case text that the researcher reviews. Cognitive psychology suggests that the labels and categories provided by the key system will strongly influence the researcher.[153] The labels and categories of the key system remain constant and therefore exert a homogenizing influence on print researchers.[154] More specifically, as compared to electronic research (and when considered in light of relevant principles of cognitive psychology), print research promotes greater uniformity as between different researchers with respect to (1) the cases retrieved by the researcher, and (2) researcher interpretation of retrieved cases.

a. Uniformity in Case Retrieval

A few key points about the print research process help to explain how it facilitates overlap in researcher case retrieval. First, print researchers are far more likely than electronic researchers to be exposed to the same data — the same universe of topics, within a topic the same options with respect to key numbers, and within key numbers the same case digest blurbs. Recall that case digests organize cases into over four hundred topic categories.[155] Each topic begins with an

152. See Bintliff, *supra* note 11, at 343–44 ("[The digest system] guided our thinking and analysis of the law by providing us with a structure used across the country. Lawyers in Florida and South Dakota, Ohio and Nevada, consulted the same books, used the same organization framework, found the same cases."); Hanson, *supra* note 13, at 599 ("Paradoxically, although information accessed electronically may have enhanced meaning for individual users because it is tailored more specifically to their particular purposes, it is less meaningful as a basis for collective consciousness and professional specialization in social groups precisely because of its individualistic quality."); McKenzie & Vaughn, *supra* note 62, at 5 (referring to the digest indices as "a pre-formed framework, an outline of the law, that guided the researcher's thought process" and arguing that little or no pre-analysis is involved in electronic research).

153. *See supra* notes 92–94 and accompanying text. Notably, while not referencing cognitive psychology, Robert Berring has written persuasively about the importance of classification in influencing understanding of the law. *See* Berring, *Thinkable Thoughts*, *supra* note 11, at 310–11 ("Because those who use the [classification] system tend to conceptualize in terms of the system and, as a system matures, it becomes authoritative, the classification system simply describes the universe. Researchers mature using it, organize their thoughts around it, and it then defines the world of 'thinkable thoughts.'").

154. Put another way, print research using the key system functions like a series of signs directing researchers where to go and signaling how to understand what they find when they get there. (Imagine a road sign reading, "10 miles to Pocatello" followed by another reading, "Welcome to Pocatello.") Although there will be variations in the signs that individual researchers encounter and how individual researchers interpret those signs, overall print research using the key system is a far more directed and uniform research process than electronic research. The key system does not require researchers to choose a particular fork in the road when conducting research; it does, however, make it far more likely that researchers are making decisions based on similar (or even the same) sets of information.

155. There are numerous junctures where print research would not necessarily be uniform as between researchers. For example, different researchers could select different topics and/or key numbers as their access point. However, the point is not that print research re-

overview that lists "Subjects Included" and "Subjects Excluded and Covered by Other Topics"[156] and is then broken down into many individual key numbers. At the beginning of each topic, an overview lists all of the key numbers falling under the topic, sometimes further grouped under organizational headings. Although print researchers may elect to focus their search in different topic areas, they are all faced with selecting from the same set of topics. And although print researchers may elect to pull different cases, they all select based on the same set of case digest descriptions organized in the same system of key topics and numbers. Electronic researchers, on the other hand, may entertain innumerable different permutations of electronic searches.

Moreover, this common information that print researchers encounter is structured as categories and labels. The topics and key numbers announce categories that cases fit within; along with the case blurbs, they also function as "labels" announcing the meaning of the cases to be retrieved. Cognitive psychology informs us that these categories and labels will significantly influence researcher choices about which cases to review.[157] Even print researchers pursuing the same research question may not retrieve an identical set of cases because they may make different decisions at these various junctures about the topics or key numbers to review or the particular cases to retrieve. However, the uniformity of the predetermined options that they are presented with makes it more likely that they will retrieve at least some (if not many) of the same cases. In deciding whether to retrieve a particular case, print researchers have not only a large amount of information about the case — what topic it falls under, what key number subject it falls within, the case blurb description — but the *same* information about the case.

It is easy to imagine that two print researchers researching the same question might select the same topic to research from, identify the same key numbers as particularly relevant, and within those key numbers decide to retrieve the same cases based on how closely the case blurbs seem to line up to the research question. In contrast, electronic research is more open-ended and subject to greater influence by researcher idiosyncrasy, which makes it far less likely that there will be the same amount of overlap with respect to the cases retrieved.

As compared to print research, electronic research can lead to highly divergent outcomes. First, the number of possible permutations in constructing an electronic search is vast. Will the search be struc-

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sults in absolute uniformity as between researchers, only that it is likely to result in greater uniformity than electronic research.

156. Notably, to the extent that two print researchers select different topics through which to begin their research, the overview section can help to channel an errant researcher back to the more on-point topic.

157. *See supra* notes 96–102 and accompanying text.

tured as a Natural Language search or a Terms and Connectors search? What language or terms will the researcher use to search? Will the researcher search by words? By phrases? By author? Title? All of the above? Will the researcher place a date range on the search? Even a small change in search criteria can lead to dramatically different result lists.

Second, the result lists that researchers obtain after a search do not neatly summarize each case's relevance with respect to a particular key number, as do case digest blurbs. Instead, the result lists contain highlighted snippets of the search criteria as they appear in the case. Will a researcher decide to click into and investigate a case based on the highlighted snippet of case text (taken out of context)? Even with respect to deciding which cases to review in depth, the electronic research process offers far greater possibilities for divergence. Thus, considering changes in the research process and the strong influence of categories and labels on understanding, it is fair to predict that electronic researchers, presented with a wider range of more ambiguous data during the research process than print researchers, will end up with more varied results than print researchers.

b. Uniformity in Case Interpretation

The conforming influence of the print research process does not end with the selection of cases. For the reasons described below, when print researchers retrieve a case through the print research process they are more likely to adopt uniform interpretations of the case's meaning. Thus, print researchers are more likely to have overlap with respect to the cases that they retrieve and are more likely to understand those cases in similar ways.

By the time a print researcher actually reads the text of a case, she will frequently already have a large amount of information about the case's meaning. Consider, for example, the case *Doe v. Celebrity Cruises, Inc.*[158] An electronic researcher retrieving this case after a Terms and Connectors search would know only that it matched the search criteria and have seen a snippet of the case text with the search terms highlighted. A print researcher, on the other hand, would know the topic that the case falls under (Ferries), the heading that it falls under (Regulation and Operation), the heading(s) that it does *not* fall under (Establishment and Maintenance), the key number that it falls under (Duty to operate and transport), the key numbers related to the topic that it may or may not fall under (e.g., Franchises and privileges, Character of a ferry as a highway, Licenses and taxes, Tolls or fares, etc.), and the case digest description ("Common carriers by sea who

158. 287 F. Supp. 2d 1321 (S.D. Fla. 2003).

have a contractual duty to transport passengers to destination in a reasonably safe manner include ferries, ocean liners, or cruise ships. Shipping Act of 1984, § 3(6), 46 App. U.S.C.A. § 1702(6).").[159]

In light of the strong influence that categories and labels have on understanding,[160] we would expect that a print researcher who retrieves this case would interpret the case through the lens of these categories and labels. An electronic researcher interpreting the case would do so without the influence of these categories and labels. Again, even with the preface of uniform category and label information, two print researchers could well reach different conclusions about the import of a case. And even when electronic researchers read a case without such uniform preparatory information they may well reach the same interpretation of the case. However, there does seem to be some basis to predict that print researchers, conditioned by numerous prior signals about a case's meaning and significance, would converge more frequently with respect to their interpretations of the case than electronic researchers unconditioned by uniform prior signals about case meaning.

In sum, viewing changes in the research process through the lens of cognitive psychology suggests a broad shift in the content and interpretation of search results — we would expect greater uniformity as between researchers in the context of a print search and, conversely, greater divergence as between researchers in the context of an electronic search. The connection between this shift in the comparative content of search results and framing decisions seems clear. The primary purpose of conducting research is to inform decisions about which claims or motions to bring, what kinds of arguments to make, how to structure arguments, and the like.[161] Greater variety between researchers with respect to cases researched and interpretations thereof would naturally lead to greater variety in terms of framing. When researchers review a greater variety of cases and interpret them without uniform signals from key system information, they will be more likely to articulate different theories and arguments based on those research materials.[162]

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159. 57 WEST'S FEDERAL PRACTICE DIGEST 4TH 146–47 (Supp. 2008).

160. *See supra* notes 121–31 and accompanying text.

161. Legal reasoning has been defined as "the method by which lawyers invent arguments, judges and regulators make considered legal decisions, and students and professionals learn the law." Vern R. Walker, *Discovering the Logic of Legal Reasoning*, 35 HOFSTRA L. REV. 1687, 1704 (2007). Although our understanding about the precise process of legal reasoning is limited, it seems clear that discovering applicable substantive legal rules is at least one component of the process. *See id.* at 1693–96.

162. Consider, for example, a situation where Researcher A reviews cases 1–8 and bases her analysis on the knowledge gleaned from those cases. Researcher B reviews cases 1–8 and case 14 and bases her analysis on knowledge developed from those cases. If Researcher B finds a useful new theory, angle or argument in case 14 that is not articulated in cases 1–8, then the frame adopted by Researcher B may be different than that adopted by Researcher A. Similarly, if Researcher A and Researcher B both review case 1 but Researcher A inter-

2. Tilting at Windmills

Considering changes in the research process in light of principles of cognitive psychology also suggests that there will be more tilting at windmills in a world of electronic research. The phrase "tilting at windmills" means simply that attorneys will be more likely to advance marginal cases, theories, and arguments. Concomitantly, they will be less aware that they are doing so. The term "marginal" refers to the idea that a theory or argument is more likely to be perceived as irrelevant, weak, or less likely to be accepted by courts. Notably, *purposefully* advancing a marginal case, theory or argument built on an unusual but creative strategy, or a strategy that is weak on doctrine but with a strong normative claim is a time-honored, laudable approach to challenging and advancing the law. This type of strategy is not what is meant by "tilting at windmills."[163] It is one thing to self-consciously and with full appreciation of the low likelihood of success set out to push doctrinal limits; it is quite another to tilt at windmills by advancing a novel or marginal claim, theory, or argument without appreciating its tenuousness.

In short, both print and electronic researchers are motivated in their research and subject to confirmatory bias; electronic research exacerbates confirmatory bias as compared to print research by removing some of the checks on confirmatory bias that are present during a print search. Recall the observations about differences between electronic and print research: (1) electronic researchers are not guided by key system information to the same extent as print researchers with respect to identifying relevant theories, principles, and cases; (2) electronic researchers do not encounter and interpret individual cases through the lens of key system information to the same extent as print researchers; and (3) electronic researchers are exposed to more — and different — case texts than print researchers. Recall also the principles of cognitive psychology described above — the strong influence of categories and labels on understanding and the tendency to seek out information supportive of a claim or belief and avoid or dismiss information that does not support a claim or belief (confirmatory bias and selective information processing). Taken together, these observed differences in research process and principles of cognitive psychology suggest that electronic research will encourage tilting at windmills

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prets the cases as relevant and applicable to the question at hand (and goes on to research a related line of cases) but Researcher B interprets case 1 as inapplicable, Researcher A may well include theories or arguments from case 1 in her frame, while Researcher B might not. Thus, divergence with respect to the cases that researchers review and how they interpret those cases can lead to greater divergence with respect to framing.

163. To the extent that electronic research leads to more judicious and self-conscious creativity of argument, this would not only generate diversity in framing but could engender benefits for the law.

because it facilitates and encourages (1) the resurrection and use of moribund cases, (2) ready dismissal of contrary cases, and (3) minimization of the limitations or weakness of cases or theories perceived as supportive.

a. Resurrection of Moribund Cases

A "moribund" case is an old case that has not been cited or has been cited only a few times. In a print search, these cases are less likely to be found than during an electronic search. In a print search, these cases would likely only be found through a case digest, since it would be impossible to work back from a case citing the original case if the original case has not been cited. However, digests cover limited time periods, and thus locating old cases is labor-intensive. Each digest set is divided into different series that cover limited time periods. For example, the *Federal Digest* covers cases from 1754 to 1939;[164] the *Modern Federal Practice Digest* covers cases from 1939 to 1960;[165] *West's Federal Practice Digest 2d* covers cases from 1961 to 1975;[166] *West's Federal Practice Digest 3d* covers cases from 1975 to the mid-1980s;[167] and *West's Federal Practice Digest 4th* covers cases from 1984 to the present.[168] In order to locate an uncited or lightly cited case dated before 1939, a print researcher would most likely have to make her way through four earlier digests. In electronic research, on the other hand, the moribund case may be on the first page of the researcher's result list if the search parameters happen to match the case text.

Both their vintage and lack of subsequent citation suggest that moribund cases have withered on the vine for a reason — perhaps they are poorly reasoned or out of step with how the law has developed.[169] While the vintage and lack of subsequent citation should cause researchers to afford less weight to moribund cases, confirmatory bias and selective information processing suggest that if a moribund case suits a researcher's goals,[170] the researcher will be inclined to overlook such shortcomings.

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164. FEDERAL DIGEST (West 1941).

165. MODERN FEDERAL PRACTICE DIGEST (1960).

166. WEST'S FEDERAL PRACTICE DIGEST 2D (1976).

167. WEST'S FEDERAL PRACTICE DIGEST 3D (1984).

168. WEST'S FEDERAL PRACTICE DIGEST 4TH (1989). These hardback volumes are regularly updated with supplements for recently decided cases.

169. *See generally* Fried, *supra* note 10, at 303–07 (1999).

170. Here is a good description of the motivations that attorneys bring to their research: "The entire reason that the lawyer is engaged in the process of legal interpretation is to facilitate her client's ability to achieve some concrete objective. She has, in other words, a particular purpose for engaging in legal analysis. This purpose will invariably lead her to attempt to discover the subset of plausible legal interpretations that best supports her client's goals, a tendency expressly sanctioned by the rules of professional conduct." David B. Wilkins, *Legal Realism for Lawyers*, 104 HARV. L. REV. 469, 483 (1990) (citations omitted)

b. Distinguishing Cases

Despite confirmatory bias and selective information processing, reasonable researchers will reconsider an idea or argument if presented with case law that is sufficiently discouraging — for example, a recent, on-point, and contrary case from the appropriate jurisdiction. However, part of an attorney's charge is not to give up too quickly and ably to distinguish cases contrary to the research goal when possible.[171] For the reasons that follow, electronic research may contribute to lowering a researcher's threshold for adjudging when a case can reasonably be distinguished.

First, as described above, the digest and key systems provide a print researcher with a significant amount of information about a case before the researcher reviews the case text and, per cognitive psychology, the labels and categories imposed by the digest and key systems will have a strong influence on researcher understanding. If a case shows up under a key topic or number that is directly relevant to the researcher's goal, the researcher is not only more likely to retrieve the case, but (because it fits within the appropriate category) to credit its holding as relevant and significant to the research question. Although the researcher might be inclined to attempt to distinguish the case as a result of motivated researching, confirmatory bias, or selective information processing, a researcher may be less inclined to do so where the key system categories and labels also provide a strong signal that, as discouraging as the case may be, it is on-point and relevant to the research question. An electronic researcher, however, would make the decision as to whether a case is distinguishable without the moderating influence of key system categories and labels. For, as discussed in Part III.B, key system information, while available in electronic databases, is neither necessary to nor omnipresent in the same way during a typical electronic search. Thus, a print researcher determining whether or how readily to distinguish an adverse case would likely weigh key system signals in a manner that an electronic researcher would not. A print researcher might reason, "Although I can see some ways that I could argue that this adverse case is different from my facts, I also know that my case and the adverse case fall within the same subject and topic and raise a very similar point of law." In contrast, an electronic researcher might think, "There are some factual differences that I could use to distinguish this adverse case."

(describing the view of partisanship underlying the traditional model of legal ethics); *see also* Hanson, *supra* note 13, at 565 ("For their part, lawyers aim to develop the best possible arguments *that benefit their clients*. Thus, the two parties to a lawsuit try to cast the situation in different lights and scour the past for precedent pointing in opposite directions.").

171. Wilkins, *supra* note 170, at 473 n.17 (identifying and describing rules of professional conduct that encourage zealous advocacy).

Second, case texts are more ambiguous and subject to a greater range of interpretations than secondary source (key system) statements about the meaning of case texts. Imagine giving two attorneys a case and asking them to describe its holding and significance. Now imagine also giving those two attorneys all of the digest and key system information for a case (the subject, key topic/number that it falls under, the digest blurb) and asking them to describe its holding and significance. Again, the strong influence of categories and labeling on understanding indicates that there would likely be far greater divergence in interpretation based on the case text alone than there would be when case text is coupled with secondary source input about the case's meaning.[172] That electronic researchers will tend to be exposed to a greater number of case texts, largely without prior key system information about the meaning of those texts, suggests that confirmatory bias and selective information processing will have greater influence on electronic researchers.

c. Measuring the Value of Authority

For many of the same reasons, we would expect electronic researchers to be less apt than print researchers to recognize faults in a case or theory that is at least superficially supportive of a research goal. Recall that one of the ways that categories shape understanding is by causing people to perceive that differences between items in distinct categories are greater than they actually are.[173] Thus, knowing (based on digest and key number signals) that case A is in category A and that case B is in category B will encourage the print researcher to view case A and case B as distinct — if category A seems more applicable to the research question than category B, then cases in category B are more likely to be understood as irrelevant. An electronic researcher encountering cases A and B without knowing what categories they fall into, however, will have no preexisting information to cause her to doubt the relevance of case B and may thus be less inclined to dismiss case B.

In short, a print researcher — despite confirmatory bias and selective information processing — will likely be more aware of and influenced by secondary source information (in the form of key

172. The above-postulated distinction is perhaps easier to envision when comparing the research processes side by side. A print researcher and electronic researcher are both interested in developing a line of argument favorable to a client's needs. The print researcher identifies a case that seems to be very closely on point — the key topic and number both fit, as does the case digest description — although it cuts against developing the argument. By the time the print researcher visits the (more ambiguous) case text to determine if the case is distinguishable in some way, she will already have cause to believe that the contrary case is applicable to the research question. An electronic researcher, on the other hand, will generally be exposed to more case texts earlier in the research process than a print researcher.

173. *See supra* Part IV.B.

topics/numbers and digest blurbs) that communicates that a case does not really apply to the research question at hand.[174] An electronic researcher, likewise in the throes of confirmatory bias and selective information processing, will less likely be aware of information calling into doubt the relevance of a case and therefore will not have a force tempering the influence of strong biases to interpret the case as supportive of the research goal.[175]

Accordingly, electronic research takes away some of the checks against the exercise of confirmatory bias and selective information processing present in print research (the moderating influence of the digest and key systems)[176] and introduces new temptations to motivated researchers (readily available moribund cases, low costs for conducting frolics and detours to identify marginally supportive authority, immediate access to ambiguous case text, a temptation to false confidence in electronically located research results).[177] One scholar has noted:

> Where the research enterprise once consisted of finding a relevant precedent or two and exploring the universe of cases around them, now each side in any dispute can find bunches of relevant cases. String citations to great gobs of cases are typical, and briefs continue to expand, each page packed with 'relevant' authority.[178]

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174. *See* Bintliff, *supra* note 11, at 342–43 (observing that the digests "allow[ed] researchers to understand the relationship, context, and hierarchy of identified rules" and ascertain "when our arguments had been used, and when we were pushing the envelope of interpretation through the use of innovative logic").

175. Indeed, legal research instructors report that law students conducting electronic research frequently locate a snippet of one case that seems supportive and may not even bother to read and understand the whole case, let alone the broader doctrine. *E.g.*, McKenzie & Vaughn, *supra* note 62, at 8 ("[I]ncreasingly, students seem to avoid the hard work of reading, digesting and analyzing the results of research. They search online, hit the print button and try to hand in the printed results. We call this the datadump phenomenon, and suspect the 'cut and paste' feature of electronic retrieval adds to this . . . .").

176. Electronic research also removes some of the more intuitive signals that print research communicates about a source's authority. *See* Lien, *supra* note 62, at 101 ("Print sources . . . have distinguishing markers that are helpful in the reasoning process. Although we may not be consciously aware of it, when we pull out a bound volume of United States Reports and turn the pages, we are influenced by the very nature of the compilation to pay attention to the source. By contrast, all bits of information look alike when presented online." (citations omitted)).

177. *See* Bast & Pyle, *supra* note 59, at 292–93 (discussing studies showing that electronic researchers frequently have false confidence that electronic searches have produced satisfactory results). *See generally* Lien, *supra* note 62, at 89 ("[T]he methodology of researching in and working with electronic texts encourages work habits that prioritize speed and all too easily enable lawyers to find a kernel of phraseology that may support their often incorrect preconceived notions." (citing Bintliff, *supra* note 11, at 348)).

178. Berring, *The Imperative of Digital Information*, *supra* note 62, at 28.

Notably, testimony from the debate about the adoption of Rule 32.1 discussed in Part II.C indicates a concern about tilting at windmills and, in particular, the ability of attorneys to locate and cite to appropriate sources of authority. Numerous judges opined that attorneys appearing before them frequently cited unpublished opinions of dubious value, thereby demonstrating lack of judgment. The Honorable Myron H. Bright observed:

> If all of the lawyers who are going to appear in this committee were the quality of the lawyers that appear before us, I wouldn't worry about it because there wouldn't be an unpublished opinion that would be cited unless it was the rare case, but that's not true. The quality of lawyers who appear in appeals varies in sections, in circuits, and otherwise.[179]

The Honorable Diane P. Wood added that "[l]awyers, as you know, as Judge Bright said, are of vastly different abilities and some lawyers are not going to be as discriminating as you would be, I am confident. We read briefs like this all the time."[180] She went on to express concern about the ability of practicing lawyers to separate the significant decisions from the insignificant unpublished decisions:

> It reminds me a little bit of one of my favorite scenes from a movie. . . . [T]he very last scene of 'Raiders of the Lost Ark' deals with the question where [sic] are they going to hide the ark? Where are they going to keep it where it's absolutely safe? And you see some men trundling it down on a hand cart in an enormous warehouse . . . . [T]hey're hiding it in the midst of this giant mass of boxes and I have a feeling that the worthwhile things are going to be hidden in a similarly huge mass of cases.[181]

Changes in the threshold for deeming a case supportive or distinguishing cases may help to explain the divergent views of practitioners and judges in the debate over the adoption of Rule 32.1. Practitioners contended that "many times unpublished cases are cited because there are holes in existing precedent,"[182] while judges contended with equal fervor that unpublished opinions were "incredibly

179. MEETING OF THE ADVISORY COMMITTEE, *supra* note 11, at 16 (testimony of the Honorable Myron H. Bright).

180. *Id.* at 55 (testimony of the Honorable Diane P. Wood).

181. *Id.* at 27–28.

182. *Id.* at 82 (testimony of the Honorable Richard Frankel).

boring" and "repetitive," addressing the "90 percent" of cases on which the entire circuit would agree.[183] The truth may be that electronic research has helped to condition researchers to expand their view of what is perceived as a doctrinal "hole" by more readily dismissing contrary authority and more readily adopting a marginal authority as supportive. In other words, if there is not a case factually on all fours, then there is a hole that a client's case can be imagined to fit within.

V. THE BROADER IMPACTS OF DIVERSITY IN FRAMING AND TILTING AT WINDMILLS

Absent rigorous empirical analysis to confirm that increased diversity in framing and tilting at windmills are in fact two effects of the shift to electronic research, it is premature to dwell at length on the larger significance of these posited developments. However, even if these predictions about results of the change to electronic research don't hold up to empirical testing, understanding their potential significance still has some utility, if only to illustrate that even seemingly minor effects on researcher behavior can have much broader impacts. If our changed research process does result in greater diversity in framing or tilting at windmills, either of these developments could have significant impacts on the law and the profession.

A. Diversity in Framing

Richard Delgado and Jean Stefancic argue that the key system and its subject matter indices are inherently conservative, lead to "unconscious self censorship," and stifle "genuine innovation," and that electronic research does not go far enough to free researchers from the key system's channeling influence and encourage true creativity in law.[184] Molly Warner Lien and Barbara Bintliff, on the other hand, argue that the key system and its subject matter indices are crucial to developing nuanced, meaningful legal arguments and thus raise concern that electronic research divorces the researcher from these tools.[185]

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183. *Id.* at 54, 56 (testimony of the Honorable Diane P. Wood).

184. Delgado & Stefancic, *Triple Helix Dilemma*, *supra* note 62, at 216–25; *see also* Delgado & Stefancic, *Triple Helix Dilemma Revisited*, *supra* note 62, at 310 (arguing that electronic databases do not free researchers from conventional, key-system-defined searching because "[t]he categories formerly inscribed in the West Digest System, where they guided searches along predictable lines, remain in our minds where they limit what we can do just as effectively as they did when they were overt and on the page.").

185. Bintliff, *supra* note 11, at 343 (arguing that the West Digest System topic outlines "allow[] researchers to understand the relationship, context, and hierarchy of identified rules. . . . The digest's organization follows the same pattern as our legal reasoning process . . . ."); Lien, *supra* note 62, at 89, 101 (observing that "[p]rint sources . . . have distin-

This Article reaches a more limited, but nonetheless significant, conclusion. With electronic research as the norm, the framing of a case will become a more significant and disputed aspect of litigation — regardless of whether it results from more innovation and creativity or merely marginal legal arguments. If accurate, even this more limited claim has potentially significant implications.

For example, by offering a greater variety of possible frames for a case, parties may inadvertently enhance the role of judges. A core principle of our adversarial system is that judges decide the matters before them based primarily on the facts and theories presented to them.[186] Litigants confine a judge's decision to "a very narrow range of possibilities — possibilities defined by the facts elicited by the parties and the legal theories advanced by them."[187]

Moreover, greater diversity in framing has at least the potential to enhance unpredictability with respect to claims, motions, and trial outcomes. The greater the number of perceived claims and theories in play, the greater the possible permutations with respect to whether a claim is brought, how a motion is resolved, or whether a case is won or lost. Decreasing predictability could have myriad effects, perhaps most obviously with respect to incentives for settlement.[188]

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guishing markers that are helpful in the reasoning process" and lamenting that "[w]hile technology unquestionably gives lawyers the ability to marshal bits of information instantly from a host of cases, and to dispatch them into memoranda and briefs like well-drilled soldiers in a war of logic, the speed of deployment inevitably discourages lawyers from taking the time to analyze the wisdom, correctness and applicability of legal arguments").

186. Courts will rarely decide a question sua sponte where the parties have failed to raise and brief the issue. *See* Christopher J. Peters, *Adjudication as Representation*, 97 COLUM. L. REV. 312, 353 (1997) (describing how litigants shape the issues before a court and observing that "[t]he decisionmaking process in a court case has much more to do with the participation of the litigants than with the authoritative fiat of the judge. . . . [I]mportantly, the stricter the conception of the adversary system that is adhered to, the smaller will be the realm of judicial authorship of the resulting decision"); *see also id.* at 352 ("Theoretically, of course, the court could make its choice on a whim, or on a theory entirely separate from any advanced by either of the litigants. But the court probably will consider itself to be much more constrained than this. Unless it wishes to renounce centuries of Anglo-American juridical tradition, the court must articulate reasons for whatever decision it makes. The most complete and readily available sets of reasons are those offered by each of the parties and contained in their briefs and, perhaps, their oral arguments. This is an enormous practical incentive for the court to avoid setting off on its own and deciding the motion according to some independent theory. And even aside from this incentive, the court is likely to feel . . . that its decision must be 'strongly responsive' to the arguments of the parties in order to qualify as legitimate adjudication.").

187. *Id.* at 355.

188. *See, e.g.*, Peter Toll Hoffman, *Valuation of Cases for Settlement: Theory and Practice*, 1991 J. DISP. RESOL. 1, 29 (describing the considerations attendant in decisions to settle, including "[t]he consequence of litigation most influencing a client's choice of settling or proceeding to trial is risk: the risk of losing").

B. Tilting at Windmills

An increase in tilting at windmills could likewise have significant ramifications. One important role for practitioners is to act as gatekeepers with respect to which cases and claims to bring, which theories to pursue, which motions to bring, how to contest those motions, when to settle, and when to go to trial.[189] If electronic research has a tendency to cloud the judgment of lawyers as gatekeepers and thereby cause them to tilt at windmills, this development could have significant effects on investments of client and judicial resources.

One practical consideration in thinking about an identified increase in tilting at windmills is whether it should prompt reconsideration of the tools, such as Federal Rule of Civil Procedure 11 ("Rule 11"), used to balance zealous advocacy and conservation of judicial and client resources.[190] Under Rule 11, attorneys certify that

> [T]o the best of the person's knowledge, information, and belief, formed after an inquiry reasonable under the circumstances . . . the claims, defenses, and other legal contentions [in the attorney's submissions to the court] are warranted by existing law or by a nonfrivolous argument for extending, modifying, or reversing existing law or for establishing new law . . . .[191]

Does the combination of cognitive bias and electronic research that encourages tilting at windmills warrant relaxed application of Rule 11 — recognition of a "the computer made me do it" defense of sorts? On the flip side, does recognition that attorneys engaging in electronic research may be more inclined to adopt creative strategies and diverse frames that could be mistaken for frivolous argument likewise support relaxed application of Rule 11? Or do these developments instead suggest the need for greater policing of attorney ga-

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189. *See* Fred Zacharias, *Lawyers as Gatekeepers*, 41 SAN DIEGO L. REV. 1387 (2004) (describing the advising, screening, personal separation, and gatekeeping functions performed by lawyers); *see also* Bintliff, *supra* note 11, at 349–50 (arguing that electronic research may cause researchers to lose sight of legal rules such that they "cannot develop an accurate prediction of a case's outcome" and may, in turn, "run the risk of losing the predictability, and with it the stability, of our judicial system"); Zacharias, *supra*, at 1389–90 ("Let us consider, as a starting point, the famous statement of Elihu Root that 'half of the practice of a decent lawyer consists in telling would-be clients that they are damned fools and should stop.'" (quoting 1 PHILIP C. JESSUP, ELIHU ROOT 133 (1938))).

190. This analysis would also apply with respect to Model Rule of Professional Conduct 3.1, which provides that "a lawyer should not bring a proceeding, raise or controvert an issue 'unless there is a basis in law or fact for doing so . . . which includes a good faith argument for an extension, modification or reversal of existing law.'" Margolis, *supra* note 70, at 95 (quoting MODEL RULES OF PROF'L CONDUCT R. 3.1 (2007)).

191. FED. R. CIV. PROC. 11(b).

tekeeping, either through reworking or more stringently applying Rule 11, as a necessary measure to condition attorneys using electronic research to take greater care in evaluating the claims and theories that they advance? Regardless of how these questions are resolved, they are significant for a largely self-regulated profession.

VI. CONCLUSION

Ultimately, cognitive psychology — while useful to help predict how changes in research process *may* affect larger issues such as research outcomes and interpretation — cannot *confirm* the manifestation of these predicted effects. Cognitive psychology has, however, been useful in providing an analytical basis for developing a few possibilities with respect to the shift from print to electronic research, such as diversity in framing and tilting at windmills. Significantly, these two predictions are more amenable to empirical testing than the general proposition that the shift to electronic research is having broad, non-process impacts. With refinement based on response to this Article, a follow-up article may undertake empirical testing of the diversity in framing and tilting at windmills predictions.

While any effort to empirically test the validity of the diversity in framing and tilting at windmills predictions would pose significant challenges, including careful construction of testing parameters, this Article suggests some possible bases for empirical testing. Print and electronic researchers could, for example, be given a legal research problem. The case texts that they review could be observed to determine whether, on balance, there is greater overlap with respect to the cases that print researchers review as compared to electronic researchers. This, of course, does not directly test either prediction; it does, however, test one assertion underlying those predictions — that print research results in greater uniformity in case retrieval. Similarly, the predicted resurrection of moribund cases could be assessed by reviewing case citation data to determine if there has been an increase in instances where cases with few citations are suddenly cited after a significant interim.

With respect to directly testing the predictions, one potential metric for identifying an increase in diversity in framing could be the number of different arguments or theories raised by parties and resolved by courts over time. Evidence already suggests that judicial opinions are lengthier in the age of electronic research than in the past. [192] The next step would be to assess whether this increased heft results, in part, from the need to dispose of a greater variety of arguments. To identify an increase in tilting at windmills, researchers

192. *See* Berring, *The Search for Cognitive Authority*, *supra* note 62 and accompanying text.

could examine the frequency of court rejections of litigant attempts to distinguish cases.

As noted above, any effort to empirically test whether electronic research results in increased diversity in framing or tilting at windmills would require careful consideration and structuring as well as significant resources. The difficulty of this endeavor underscores the utility of employing some analytical tool (in this case, cognitive psychology) beyond reasoning from experience and conjecture before setting out to conduct empirical inquiry.

Ultimately — as difficult as it may be — it is a worthy endeavor to better understand how present and future changes in the communication of law, including electronic legal research, influence the profession and practice. This Article has sought to demonstrate that the shift to electronic research is likely shaping the law in little-noticed, but nonetheless significant, ways. Although we presently lack data to identify the precise contours of these impacts, this Article advocates that the academy and the profession recognize technologies for the communication of law, and in particular electronic research, as developments enmeshed with the practice and conception of law that warrant self-conscious attention and management.