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# Accessing Law: An Empirical Study Exploring the Influence of Legal Research Medium

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ABSTRACT

*The legal profession is presently engaged in an uncontrolled experiment. Attorneys now locate and access legal authorities primarily through electronic means. Although this shift to an electronic research medium radically changes how attorneys discover and encounter law, little empirical work investigates impacts from the shift to an electronic medium.*

*This Article presents the results of one of the most robust empirical studies conducted to date comparing research processes using print and electronic sources. While the study presented in this Article was modest in scope, the extent and type of the differences that it reveals are notable. Some of the observed differences between print and electronic research processes confirm predictions offered, but never before confirmed, about how the research medium changes the research process. This Article strongly supports calls for the legal profession and legal academy to be more attentive to the implications of the shift to electronic research.*

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## I. INTRODUCTION

Do changes in the research process—the means by which legal researchers find law—in turn give rise to more substantive changes in research outcomes or legal reasoning and analysis? Legal research constitutes a core legal skill and provides the building blocks for constructing legal reasoning and analysis.[1] In the words of one scholar, "[i]t is an integral part of thinking like a lawyer, for it is the way we find out what 'the law' is, and the way we begin the process of understanding its application to our situation."[2] Computer-assisted legal research using databases such as LexisNexis and Westlaw now allows for legal research, long the province of print sources often located in libraries, to be conducted electronically.[3] This shift in the medium used to conduct research—from books to computers—changes

1. AMERICAN BAR ASSOCIATION, 2012–2013 ABA STANDARDS AND RULES OF PROCEDURE FOR APPROVAL OF LAW SCHOOLS Standard 302(a)(2) (2012) ("[a] law school shall require that each student receive substantial instruction in . . . legal analysis and reasoning, legal research, problem solving, and oral communication"), *available at* http://www.americanbar.org/content/dam/aba/publications/misc/legal_education/Standards/2012_2013_aba_standards_and_rules.authcheckdam.pdf.

2. Barbara Bintliff, *From Creativity to Computerese: Thinking Like a Lawyer in the Computer Age*, 88 LAW LIBR. J. 338, 340–41 (1996).

3. *See id.* at 338.

the mechanics of legal research.[4] The differences between conducting print and electronic research have been documented at length elsewhere and include everything from the physical location of the researcher (electronic research can be conducted from individual computers screens in private homes) to the dependence of the researcher on indexing systems.[5]

Many scholars, including one of the authors of this study, have considered the influence of digitization on the law generally and on legal research specifically.[6] The lion's share of existing scholarship

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4. *See id.* at 338–39.

5. For example, electronic research can be conducted from individual computers screens in private homes; print research often requires physical access to a library. Free text word searches cannot be conducted using print sources, rendering print researchers more reliant on indexing systems. Robert C. Berring, *Collapse of the Structure of the Legal Research Universe: The Imperative of Digital Information*, 69 WASH. L. REV. 9, 19–34 (1994).

6. *See, e.g.*, Steven M. Barkan, *Deconstructing Legal Research: A Law Librarian's Commentary on Critical Legal Studies*, 79 LAW LIBR. J. 617 (1987); Carol M. Bast & Ransford C. Pyle, *Legal Research in the Computer Age: A Paradigm Shift?*, 93 LAW LIBR. J.285 (2001); Robert C. Berring, *Legal Information and the Search for Cognitive Authority*, 88 CAL. L. REV. 1673 (2000); Robert C. Berring, *Legal Research and the World of Thinkable Thoughts*, 2 J. APP. PRAC. & PROCESS 309 (2000); Robert C. Berring, *Chaos, Cyberspace and Tradition: Legal Information Transmogrified*, 12 BERKELEY TECH. L.J. 189 (1997); Robert C. Berring, *On Not Throwing out the Baby: Planning the Future of Legal Information*, 83 CAL. L. REV. 615 (1995); Robert C. Berring, *Collapse of the Structure of the Legal Research Universe: The Imperative of Digital Information*, 69 WASH. L. REV. 9 (1994); Robert C. Berring, *Legal Research and Legal Concepts: Where Form Molds Substance*, 75 CAL. L. REV. 15 (1987); Daniel Dabney, *The Universe of Thinkable Thoughts: Literary Warrant and West's Key Number System*, 99 LAW LIBR. J. 229 (2007) (comparing free text and natural language searches and searches using the Key Number System); Richard Delgado & Jean Stefancic, *Why Do We Ask the Same Questions? The Triple Helix Dilemma Revisited*, 99 LAW LIBR. J. 307 (2007); 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); Jill Anne Farmer, *A Poststructuralist Analysis of the Legal Research Process*, 85 LAW LIBR. J. 391 (1993); Casey R. Fronk, *The Cost of Judicial Citation: An Empirical Investigation of Citation Practices in the Federal Appellate Courts*, 2010 U. ILL. J.L. TECH. & POL'Y 51 (2010) (analyzing citations patterns and concluding that electronic legal research has caused a statistically significant decrease in the number of unique string-cited cases); F. Allan Hanson, *From Key Numbers to Keywords: How Automation Has Transformed the Law*, 94 LAW LIBR. J. 563, 589–92 (2002); Paul Hellyer, *Assessing the Influence of Computer-Assisted Legal Research: A Study of California Supreme Court Opinions*, 97 LAW LIBR. J. 285 (2005); Julie M. Jones, *Not Just Key Numbers and Keywords Anymore: How User Interface Design Affects Legal Research*, 101 LAW LIBR. J. 7 (2009) (analyzing how the user interface of LexisNexis and Westlaw influence research behaviors); Ethan Katsh, *Digital Lawyers: Orienting the Legal Profession to Cyberspace*, 55 U. PITT. L. REV. 1141 (1994); Katrina Fischer Kuh, *Electronically Manufactured Law*, 22 HARV. J.L. & TECH. 223 (2008); Molly Warner Lien, *Technocentrism and the Soul of the Common Law Lawyer*, 48 AM. U. L. REV. 85 (1998); M. Sara Lowe & Karen L. Wallace, *HeinOnline and Law Review Citation Patterns*, 103 LAW LIBR. J. 55, 65 (2011) (finding that "online access to the full text of older journal articles through HeinOnline has not increased their citation rates"); Ellie Margolis, *Authority Without Borders: The World Wide Web and the Delegalization of Law*, 41 SETON HALL L. REV. 909 (2011) (describing how research medium can influence perceptions of and citations to authority, in particular by encouraging reliance on nonlegal authority);Ellie Margolis, *Surfin' Safari—Why Competent Lawyers Should Research on the Web*, 10 YALE J.L. & TECH. 82 (2007); Susan Nevelow Mart, *The Relevance of Results*

suggests that there are likely substantive impacts, including everything from a new emphasis on case facts[7] to the encouragement of shallow legal reasoning and analysis.[8] Yet despite general recognition of the importance of legal research and the potential impact of the shift to electronic legal research, the academy and the profession have paid relatively little attention to understanding or managing the effects of this sea change in the conduct of legal research.[9] This may be due in part to the fact that even very well-informed predictions about the impacts of electronic research suffer from a "credibility gap," namely a lack of objective evidence that electronic research changes research processes, legal reasoning, and research outcomes.[10] This credibility gap prevents "important conclusions about the broader impacts of the shift to electronic research . . . from developing the force that they otherwise might have."[11]

Although scholars suggest a variety of ways that electronic legal research might be effecting substantive changes in legal reasoning and research outcomes, few have conducted empirical

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*Generated by Human Indexing and Computer Algorithms: A Study of West's Headnotes and Key Numbers and LexisNexis's Headnotes and Topics*, 102 LAW LIBR. J. 221 (2010); Lee F. Peoples, *The Death of the Digest and the Pitfalls of Electronic Research: What Is the Modern Legal Researcher to Do?*, 97 LAW LIBR. J. 661 (2005); 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); Judith M. Stinson, *Why Dicta Becomes Holding and Why It Matters*, 76 BROOK. L. REV. 219, 250–55 (2010) (positing that electronic legal research can encourage reliance on dicta instead of holdings); Ronald E. Wheeler, *Does WestlawNext Really Change Everything? The Implications of WestlawNext on Legal Research*, 103 LAW LIBR. J. 359 (2011) (evaluating the impact of the WestlawNext's electronic research service on legal research and practice); Elizabeth McKenzie & Susan Vaughn, *PCs and CALR: Changing the Way Lawyers Think* (NELLCO Legal Scholarship Repository, Suffolk University Law School Faculty Publications, Paper 34, 2007), *available at* http://lsr.nellco.org/cgi/viewcontent.cgi?article=1043&context=suffolk_fp; *see also* M. ETHAN KATSH, LAW IN A DIGITAL WORLD (1995) (considering more broadly the impacts of technology on the legal profession); M. ETHAN KATSH, THE ELECTRONIC MEDIA AND THE TRANSFORMATION OF LAW (1989) (assessing the impact of changes in communication on a wide range of legal concepts and activities).

7. *See, e.g.*, Bast & Pyle, *supra* note 6, at 297–98.

8. *See* Lien, *supra* note 6, at 88–90, 126–34.

9. Notably, empirical research conducted in the medical field has found that working with electronic, as opposed to paper, patient records can substantively influence the doctor-patient dialogue and the type of information recorded. *See* Vimla L. Patel et al., *Impact of a Computer-Based Patient Record System on Data Collection, Knowledge Organization, and Reasoning*, 7 J. AM. MED. INFORMATICS ASS'N 569 (2000); Vimla L. Patel et al., *Patients' and Physicians' Understanding of Health and Biomedical Concepts: Relationship to the Design of EMR Systems*, 35 J. BIOMEDICAL INFORMATICS 8 (2002).

10. Kuh, *supra* note 6, at 239–41.

11. Kuh, *supra* note 6, at 240.

research directed to this question.[12] One of the most ambitious studies to date, focused primarily on how the research medium influences research outcomes, asked a group of twenty-eight advanced legal research students to research a set of questions using print digests, an electronic "terms & connectors" search, and KeySearch (in varying orders).[13] Half of the questions were designated as "rule" questions and the other half as "fact" questions, and each question corresponded with a specific federal district court case answer.[14] The study found that students were slightly more accurate when using print resources to answer fact questions and slightly more accurate when using electronic resources to answer rule questions.[15]

Overall, however, little empirical work has been done by legal scholars to explore the impacts of the shift to electronic research.[16] Empirical work is expensive, lengthy, and, for a variety of reasons, does not fit well with the rhythms, motivations, and training of the legal academic.[17] The prior experience of one of this study's authors with empirical research studies was enormously helpful in developing the present study's design and methodology.[18] Nonetheless, we found it necessary to tailor the study's aims and design to fit within the available resources.[19]

This Article seeks to help overcome the above-described credibility gap and focus attention on the need to understand and

12. Kuh, *supra* note 6, at 237–41 (reviewing scholarship and empirical studies);*see also* Custer, *supra* note 6, at 265 (reporting the findings of an empirical study conducted using survey data); Fronk, *supra* note 6, at 73–79 (presenting the findings of an empirical analysis of citation practices); Lowe & Wallace, *supra* note 6, at 64–67 (using bibliometric analysis to explore the influence of HeinOnline on citation patterns).

13. Peoples, *supra* note 6, at 668–70.

14. The study authors provided the following as an example of a "rule" question: "Can a state prohibit the display of symbols that some citizens find offensive on automobile license plates? Find and provide a citation to a federal district court case from Maryland that answers this question with a legal rule." *Id.* at 669. They provided the following as an example of a "fact" question: "You leave a briefcase full of rare coins in your hotel's safe deposit box. The coins are subsequently stolen from the safe deposit box. Find and provide a citation to a federal district court case from Indiana with a similar fact pattern." *Id.* at 669.

15. *Id.* at 670.

16. See, for example, Richard K. Neumann, Jr. & Stefan H. Krieger, *Empirical Inquiry Twenty-Five Years After the Lawyering Process*, 10 CLINICAL L. REV. 349, 383–95 (2003), for a discussion on the difficulties of conducting empirical research and other factors that discourage its conduct.

17. *See id.*

18. *See generally* Stefan H. Krieger, *The Effect of Clinical Education on Law Student Reasoning: An Empirical Study*, 35 WM. MITCHELL L. REV. 359 (2008); Stefan H. Krieger, *The Development of Legal Reasoning Skills in Law Students: An Empirical Study*, 56 J. LEGAL EDUC. 332 (2006).

19. The authors personally funded many of this study's costs, including payments to research subjects. We also received support in the form of a generous research grant from Hofstra Law School.

manage the shift to electronic research by providing new empirical evidence that electronic research influences the mechanics of the research process, researcher behaviors and thinking, and research outcomes. It presents the findings of an empirical study comparing law-student research processes using print and electronic sources.[20] The research sample consisted of twenty law students. The subjects received a legal research question, and their research sessions were recorded and transcribed. Ten of the subjects used print sources to conduct the research, and ten of the subjects used electronic sources to conduct their research. The research-session transcripts were coded for defined variables, and the resulting datasets were analyzed to discern differences between the print and electronic groups. The study data revealed a number of notable differences between the research processes conducted by the print and electronic subjects. Print and electronic subjects framed or oriented their research differently, accessed different sources during their research, interacted with those sources in distinct ways, and referenced different legal concepts when offering their conclusions.

The study's individual findings must be understood in light of several constraints. The study is small and qualitative. It does not include all of the methodological controls that would be desirable in a more comprehensive study. And, due to pragmatic constraints, its subjects were all law students, relatively new to legal research and not reflective of more expert researchers, particularly with respect to the use of print sources.[21] However, the number and extent of observed differences between print and electronic research processes is notable. Taken together, the study's findings encourage further inquiry into the ramifications of the present shift to electronic legal research. The hope is that others will attempt to replicate this study's findings or be sufficiently intrigued to embark on more ambitious and robust empirical research regarding the impacts of research medium. Another goal is to obtain funds to conduct more extensive research to further explore the impact of research medium on legal reasoning.[22]

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20. In addition to publishing the study's findings, we are making our study materials and process available and transparent. Research materials from this study, including the stimulus material, coding key, and transcripts of the research sessions are collectively referred to hereinafter as Study Documents. Some are appended in Exhibit "A," and others are available online at http://people.hofstra.edu/stefan_h_krieger; the remainder are on file with the authors.

21. One print subject lamented, "I wish I was a better book researcher, / I would be able to shepardize / if I could know how to do that." Study Documents, *supra* note 20, Transcript of Subject 15, at 16. Moreover, the study subjects were all Hofstra Law students, reflecting the composition and legal training of the Hofstra Law class.

22. For example, one of the authors of this study previously employed principles of cognitive psychology to offer specific predictions about the impact of the shift to electronic research, namely that it would increase diversity in framing (researchers using an electronic

In this regard, the study offers a template—preliminary, open to critique and improvement—for how such future research might be conducted.

## II. DESCRIPTION OF THE STUDY

This study presented subjects (second- and third-year law students[23]) with a hypothetical legal problem and asked them to research and answer the problem. Some subjects (electronic subjects) conducted their research at a computer terminal and were permitted to access only electronic sources; other subjects (print subjects) conducted their research in a law library and were permitted to access only print sources. All subjects were encouraged to verbalize their thought process as they researched and, at the conclusion of their research, to state an answer to the problem. The research sessions and the answers offered by the subjects were recorded, transcribed, coded, and analyzed.

The primary aim of the study was to compare the research and reasoning processes of law students conducting legal research using electronic and print media to identify whether and how the research medium influenced those processes. The study was not, however, intended or designed to offer definitive conclusions about the effects of the medium (print or electronic) used for legal research. The study was preliminary, qualitative, and limited in scope. It used a small sample size and did not control for a variety of demographic and other factors.[24] Most importantly, because the subjects were law students, their research knowledge and approaches, both print and electronic, are not necessarily reflective of more mature legal researchers, such as experienced practitioners. We hope, however, that the study's findings, although preliminary and narrow, encourage more robust future research into the influence of legal research medium, including efforts to replicate this study's findings.

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medium are likely to show greater divergence between one another with respect to the legal theories that they identify as applicable to a case, proceeding, or motion) and tilting and windmills (attorneys using electronic research will be more likely to advance marginal cases, theories, and arguments). Kuh, *supra* note 6, at 256–61. A variety of considerations informed our selection of the present study's design, including financial and logistical constraints, and ultimately prevented us from directly testing these hypotheses.

23. The selection and attributes of study subjects are described in greater detail in Part II.A.1, below.

24. The study did not, for example, control for gender, age, race, education history, or other similar factors.

### A. Design and Methodology of the Study

#### 1. Subjects

The study was conducted with students at the Maurice A. Deane School of Law at Hofstra University during the 2010–11 academic year.[25] The Office of Student Affairs emailed a solicitation memo to full-time students in the second and third year of law school.[26] The solicitation memo advised students that participation would be confidential, the research sessions would take no longer than ninety minutes, and that participants would be compensated in the amount of $30.[27] Students interested in participating were asked to respond by e-mail and to indicate whether they had "experience conducting legal research using print sources (i.e., library and book research as opposed to research using electronic databases such as Westlaw)."[28]

We reviewed the responses to the solicitation memo to ascertain each volunteering student's experience conducting legal research using print sources and designated each volunteer as either a potential print or electronic subject. All volunteers were deemed eligible to serve as electronic subjects. Students were deemed eligible to participate as a print subject only if they had some experience conducting legal research using print sources.[29] We then compared the cumulative grade-point averages (GPAs) of students in the potential print- and electronic-subject group pools and selected ten students from each pool to participate either as a print or electronic

25. Hofstra's Institutional Review board found that this study was exempt from its rules governing humans as research subjects because it concerned educational testing. We did not conduct further review of the study, but note that there may be reasons to subject even exempted studies to further scrutiny. *See generally* Scott DeVito, *Experimenting on Law Students: Why Imposing No Ethical Constraints on Educational Research Using Law Students Is a Bad Idea and Proposed Ethical Guidelines*, 40 SW. U. L. REV. 285 (2010).

26. We initially sought only volunteers in their third year of law school but expanded the solicitation to include students in their second year of law school to yield a sufficient number of study subjects. A copy of the solicitation memo is included in the Study Documents. *See* Study Documents, *supra* note 20, Exhibit A.

27. *See id.*

28. *See id.*

29. Hofstra students are required to take a first year course, Legal Analysis, Writing and Research, which typically includes a print research assignment. We looked for additional print research experience, beyond having taken that required first year course, for print subjects. For example, some students had conducted print research during summer employment, whereas others had experience using print sources as a result of their work on student-edited law journals.

study subject (with ten subjects in each group) with an eye to avoiding a lopsided representation of high or low GPAs in either group.[30]

### 2. Stimulus Material

The stimulus material used in this study was a landlord-tenant problem.[31] Subjects were asked to conduct legal research to advise a new client.[32] The client sought legal advice to "know her options" after a neighbor informed her that the tenant who had recently moved into the apartment next to hers was a convicted rapist.[33] The client loved her apartment and had just renewed a yearly lease but was afraid of the new tenant.[34] She reported that her landlord claimed that he could not break the new tenant's lease.[35] The prompt informed subjects that the matter took place in New York, instructed them to "conduct legal research on this issue using solely" electronic or print resources, and noted that they would be asked to "orally summarize" their "preliminary findings" when finished.[36] The problem further advised subjects that if they had not finished their research within eighty minutes, they would be asked "to summarize orally" their "conclusions up to that point."[37]

The problem's fact pattern presents a legal question not answerable with reference to a single, well-established case or line of cases.[38] A somewhat novel question was chosen to encourage research and avoid having the research sessions resemble a "treasure hunt" for one controlling authority, the discovery of which would preclude the need for further research.[39] The case most closely, although not directly, on point is *Knudsen v. Lax*.[40] In *Knudsen*, a family with

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30. A small number of volunteers who were initially selected and scheduled to complete a research session did not ultimately attend a research session (for example, because of scheduling difficulties). Research assistants identified replacement volunteers relying primarily on word of mouth; the GPAs of replacement volunteers were also reviewed.

31. The problem can be found in one of the study documents included in Exhibit A. *See* Study Documents, *supra* note 20, Exhibit A.

32. *See id.*

33. *See id.*

34. *See id.*

35. *See id.*

36. *See id.*

37. *See id.*

38. *See id.*

39. We made a conscious decision to focus less on research outcomes, and more on research and reasoning process, than some prior empirical work. *See* Study Documents, *supra* note 20, Transcripts. In the Peoples' study discussed in *supra* notes 6, 13–15 and accompanying text, for example, "[o]ne specific federal district court case from a particular state was identified as a correct answer for each objective question." Peoples, *supra* note 6, at 669.

40. Knudsen v. Lax, 842 N.Y.S.2d 341 (N.Y. Sup. Ct. 2007).

young children vacated its apartment six months prior to the end of a year-long lease after a Level 3 sex offender moved into an adjacent apartment.[41] The family brought suit for the return of its security deposit; the landlord counterclaimed for the balance of the rent due for the final six months of the contract.[42] The court held that the landlord did not have the authority to evict the sex offender and thus the landlord had not violated the warranty of habitability.[43] It also held, however, that the presence of the sex offender violated the rental agreement's express covenant of quiet enjoyment and that the rental agreement's abandonment clause was unconscionable and unenforceable.[44]

*Knudsen* is relevant to the study's problem and a useful case, but it is not controlling.[45] The study's problem did not involve threats to children, which the court found important in *Knudsen*.[46] Additionally, the problem asked subjects to evaluate the options of the hypothetical tenant; subjects were not directed to specifically consider whether the tenant would still be obligated to pay rent if she broke her lease. Moreover, subjects did not receive a copy of the lease as part of the problem, so they had no abandonment clause to reference.

### 3. Conduct of Study

Subjects chose a date and time to report for a research session using an electronic sign-up program available on a Westlaw TWEN site created for the study. Electronic subjects reported to the computer lab; print subjects reported to the Hofstra Law Library. Electronic subjects completed their research seated at a designated computer terminal. Print subjects were provided with a work area at a table in a library reading room that had been reserved for study use and was closed off to other library patrons to avoid distractions. The table was located near texts appropriate for researching the problem, including New York primary and secondary source material.

A law student research assistant met each subject and served as the proctor for the research session. We trained the research

41. *Id.* at 343.

42. *Id.*

43. *Id.* at 345.

44. *Id.* at 344–48.

45. Notably, a few subjects who located *Knudsen* failed to appreciate its potential applicability and some failed to correctly understand its holding. For example, one electronic subject cited to *Knudsen* in concluding that the landlord "could move to evict the tenant" and would have a "good case" for doing so. *See* Study Documents, *supra* note 20, Transcript of Subject 17B (Mar. 31, 2011).

46. *See* Knudsen, 842 N.Y.S.2d at 363–64.

assistants to use the "think aloud" protocol. The "think aloud" protocol is an accepted method for researching cognitive processes in which subjects are asked to verbalize thoughts as they have them.[47] The protocol is designed to shed light on a subject's thought process as it occurs and has been shown to provide valuable data on subjects' actual reasoning process.[48] Notably, the "think aloud" protocol has been used successfully in similar studies examining how subjects solve problems.[49]

Subjects received a sample LSAT warm-up problem to work through before they were provided with the stimulus material. We provided the research assistants who administered the research sessions with a detailed script.[50] Following the script, research assistants assured subjects that the research study was anonymous and ungraded and that individual answers would not be shared in any identifiable way with their professors.[51] The script stated that the research session was "not a test of your abilities, but rather an attempt to determine how people think about legal problems."[52] It also requested that subjects use the "think aloud" protocol to verbalize their thought process.[53] The script explained the "think aloud"

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47. For a detailed description of the think-aloud protocol that explains the value of the data it can be used to produce, see K. ANDERS ERICSSON & HERBERT A. SIMON, PROTOCOL ANALYSIS: VERBAL REPORTS AS DATA (1993).

48. The following excerpt from the transcript of an electronic subject, which covers only the subject's first search, illustrates the type of information gleaned through the think-aloud protocol:

> OK. (Silence) OK so it looks like it takes place in New York so I'll be looking up NY case law, some ordinances, um, and some I guess some federal statutes as well, 2nd circuit to see if there are any kind of statute or case law on point regarding serial rapists living in apartment complex and what the rights of other tenants are if there is a convicted rapists living in the building. So I'll start with going in on the Westlaw tab. (Silence) And since I don't how to search for statutes federal ordinances I really don't know how to start on that point. I'm going to start looking under case law, under state cases for New York so I'm just pulling up the tab for state cases. (Silence) Going under show all for cases and we'll be looking for New York. (Silence) So I'm just clicking off New York cases. Actually I'll do New York State and federal cases and I'm going to use the terms and connectors box. And I'll be typing in um, let's see, tenant and rights. Umm and quotation mark convicted serial rapist. And it turned up zero documents so I'll have to reset my search.

Study Documents, *supra* note 20, Transcript of Subject 18B (Mar. 26, 2011), at 4.

49. *See e.g.*, Krieger, *The Effect of Clinical Education on Law Student Reasoning: An Empirical Study*, *supra* note 18, at 339–40, 374–75 (employing a think-aloud protocol to investigate law student reasoning); Vimla L. Patel et al., *Diagnostic Reasoning and Medical Expertise*, 31 PSYCHOL. LEARNING & MOTIVATION 187, 194–95 (1994) (employing a think-aloud protocol to investigate the process by which doctors reach diagnoses).

50. The script is included in the Study Documents. *See* Study Documents, *supra* note 20, Exhibit A.

51. *See id.*

52. *Id.*

53. *Id.*

protocol and asked subjects to use it when answering a sample LSAT problem:

> When answering the question please verbalize your thoughts as naturally as possible. Please do not explain or rationalize your thoughts but rather communicate them in a free flowing manner. The easiest way to do this is to go through your normal thought process but say everything aloud as if no one else were in the room.... You do not need to read the problem out loud, but please voice any thoughts you have while mentally working through the problem as naturally as possible. The key here is to "think aloud" as freely as possible. Please verbalize when you have decided on an answer. The answer itself is less important than your thought process leading up to the answer.[54]

The research assistants informed subjects that the warm-up LSAT problem was not a part of the study but "just so that you feel comfortable with the process of voicing your thoughts aloud."[55] The script also reminded the research assistants to encourage subjects to think aloud by asking questions throughout the session such as "[s]ay whatever comes into your head" and "[w]hat else?"[56] After subjects completed the warm-up LSAT problem, the script called for the research assistants to introduce the stimulus material by telling the subjects:

> Thank you for completing this sample problem. In a moment I will provide you with a legal research assignment. Take as long as you feel is necessary to answer the problem. Just tell me when you are finished, and I will ask you to orally provide your answer. If you have not finished after 80 minutes, I'll ask you to orally give your tentative conclusions. Feel free to take notes on the laptop or organize your research in any way that you feel comfortable. Again, it is important that you verbalize your thought process throughout your research. If at any point it seems that you are not thinking aloud, I will prompt you to please express what you are thinking verbally. Please work at your own pace and answer the problem to the best of your abilities. Please be aware that this problem takes place in New York State.[57]

Subjects were then given the written stimulus material. Electronic subjects were asked to log in to either LexisNexis or Westlaw (or both), depending upon their preference. Print subjects were told that they had access to all of the necessary books in the reading room and were asked to bring selected texts back to the table to be placed under a document reader.[58] The script also reminded print subjects to "continue to verbalize your thought process as you move about the book shelves."[59]

When a subject indicated completion before eighty minutes had elapsed, the research assistant would ask the subject to provide the

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54. *Id.*
55. *Id.*
56. *Id.*
57. *Id.*
58. *Id.*
59. *Id.*

answer.[60] The script instructed research assistants to ask, "Anything else?" until the subject replied, "No."[61] If the subject was still researching after seventy-five minutes, the research assistant gave the subject a five minute warning.[62] At eighty minutes, the research assistant asked the subject to provide tentative conclusions.[63] Again, the script instructed research assistants to ask, "Anything else?" until the subject replied, "No."[64]

### 4. Collection of Data

The research sessions of both electronic and print subjects were recorded. Our goal was to capture as much data about subjects' research and reasoning processes as possible, including oral, aural, visual, and tactile information. Subjects' research sessions were recorded using Panopto, a video management and capture platform.[65] For electronic subjects, Panopto created a video and voice recording of the subject while researching and used screen capture to record what each subject viewed on her computer screen and the subject's key strokes.

Print subjects were fitted with microphones that recorded voice during the research sessions, and the work station was videotaped using Panopto. Additionally, print subjects were instructed to take texts back to the work station and place them on a document reader.[66] The document reader created a video recording of the texts as they were being reviewed by print subjects, and research assistants kept written notes documenting the texts that each print subject accessed.

### 5. Coding the Data

After the research sessions, the audio recordings of the sessions were transcribed. Research assistants used the recorded data (including screen captures and recorded key strokes, the written notes of research assistants, and images captured by the document reader) to identify the sources accessed by each subject and annotated the transcripts accordingly. We then set off propositional clauses within

60. *Id.*
61. *Id.*
62. *Id.*
63. *Id.*
64. *Id.*
65. PANOPTO, http://www.panopto.com (last visited Feb. 21, 2014) (describing Panopto technology).
66. *See* Study Documents, *supra* note 20, Exhibit A.

each transcript.[67] Segmenting the transcripts by clause allowed us to examine discrete propositions in the subjects' responses during our coding. Instead of simply reading the transcriptions of subjects' sessions for their literal or surface meaning, we used propositional analysis to reveal deeper meaning. Propositional analysis may be better able to track subjects' memory, reasoning strategies, and comprehension than an analysis of the same transcribed text that considers only the literal words and meanings of subject statements.[68] Professor Krieger successfully employed the propositional analysis technique in two prior empirical studies.[69]

Once the transcripts were prepared—transcribed, annotated with sources accessed, and segmented by propositional clause—we proceeded to code them. To code the transcripts we prepared a coding key that set forth detailed coding protocols designed to standardize the coding process. The coding key included explanations of each parameter being coded and guidance about how to code commonly occurring or questionable data.[70] For example, with respect to the parameter "Identification of Future Steps in the Research/Investigation" the coding key provides:

> Code a subject's identification of future steps in the research or investigation.
>
> ID1 Conduct additional fact investigation
>
> ID2 Conduct additional legal research
>
> ID3 Seek help from librarian
>
> Note that this refers to future steps in the research or investigation to be taken after, as a follow up to, the legal research presently being conducted. A statement "next I will

67. Specifically, we used hash marks to divide the transcribed text into discrete segments of information (or propositions). A single sentence can be embedded with multiple propositions. For example, this sentence from an electronic subject's transcript, previously quoted, *supra* note 48, might be segmented as follows: OK so it looks like it takes place in New York / so I'll be looking up NY case law, / some ordinances, um, and / some I guess some federal statutes as well, / 2nd circuit to see / if there are any kind of statute / or case law on point regarding / serial rapists living in apartment complex / and what the rights of other tenants are / if there is a convicted rapists / living in the building.

68. This is so because psychology research suggests that stimuli are stored in memory in small chunks of meaning best represented by propositions. For a description of the propositional analysis technique and the research that supports it, see WALTER KINTSCH, THE REPRESENTATION OF MEANING IN MEMORY (1974); Carl H. Frederiksen, *Representing Logical and Semantic Structure of Knowledge Acquired from Discourse*, 7 COGNITIVE PSYCHOL. 371 (1975); Vimla L. Patel et al., *Biomedical Knowledge in Explanations of Clinical Problems by Medical Students*, 22 MED. EDUC. 398 (1988); Vimla L. Patel et al., *Differences Between Medical Students and Doctors in Memory for Clinical Cases*, 20 MED. EDUC. 3 (1986).

69. *See* Krieger, *The Effect of Clinical Education on Law Student Reasoning: An Empirical Study*, *supra* note 18, at 341, 375.

70. The coding key is included in the Study Documents. *See* Study Documents, *supra* note 20, Exhibit A, Coding Key.

search for cases using the digest" should *not* be coded. A statement "I would probably want to obtain a copy of the lease and review it" *should* be coded.[71]

We coded each transcript for the following content: (1) statement of legal hypothesis;[72] (2) framing of search by source and legal concept;[73] (3) browsing;[74] (4) type of source accessed;[75] (5) identification of legal concepts in hypotheses, searches, analyses, and conclusions;[76] (6) references to client interests;[77] (7) identification of future steps in the research and investigation;[78] and (8) references to use of other research media.[79]

We chose to code this content for a variety of reasons. In some cases, we were interested to test prior predictions about how electronic research influences the research process. Scholars, for example, have observed that electronic researchers tend to access more case law and fewer secondary sources and tend to focus on facts instead of legal concepts.[80] We thus coded the sources accessed by the subjects[81] and coded whether subjects framed their searches around facts, legal concepts, or specific sources.[82] We chose to look for other parameters because they seemed likely to provide insight into researchers' legal reasoning, either about the problem or strategies for researching the problem. For example, we identified the legal concepts that researchers used to organize, conduct, and summarize their research.[83] We coded for some parameters simply because our goal was broadly to discover differences in the research process, the parameters could be readily identified, and if a difference emerged it would have been of interest. So, for example, we coded subjects' references to future steps that they intended to take in their research or investigation and to client interests.[84] Finally, we added two parameters—browsing[85] and references to the use of other research media[86]—after our initial read-through of some transcripts suggested

71. *Id.* at 804.
72. *Id.* at 800.
73. *Id.* at 800–04.
74. *Id.* at 801.
75. *Id.* at 801–02.
76. *Id.* at 802–03.
77. *Id.* at 803.
78. *Id.* at 804.
79. *Id.*
80. *See infra* notes 116–20 and accompanying text.
81. Study Documents, *supra* note 20, Exhibit A, Coding Key, at 801–02.
82. *Id.* at 800–01.
83. *Id.* at 802–08.
84. *Id.* at 804.
85. *Id.* at 801.
86. *Id.* at 804.

the possibility for a difference between print and electronic researchers with respect to those behaviors.

To refine the coding key and further standardize the coding process, we began by independently coding a transcript and then meeting to identify and discuss coding discrepancies and edit the coding key to minimize ambiguities. During this process, we coded the transcripts but also referenced the additional data on Panopto, including video and voice recording, screen captures, and document camera images. After coding all of the transcripts independently, we met and reconciled the discrepancies.

### *B. Analysis of Data*

Our analysis is qualitative. We undertook a close examination of the data collected using standardized codes to identify similarities and differences. We report and discuss our observations and the raw data collected during coding in the following section. This qualitative approach is appropriate, given the small sample size, lack of more robust methodological controls, and exploratory nature of the study.[87]

We also subjected the coded results data to quantitative analysis.[88] We used quantitative assessments of statistical significance to inform our qualitative discussion and, where a result was statistically significant or approached statistical significance, we have noted that fact in a footnote. However, in light of the small sample size and lack of methodological controls, the results of the statistical analyses should be interpreted with caution and our conclusions rest on our qualitative observations.

#### 1. Search Frames

The transcripts were coded to identify the method(s) used by a subject to frame, or organize, searches. Each new or refined search undertaken by a subject was coded as a search using a legal concept or rule, a search using facts, or a search directed to a specific legal source. The coding key describes each type of search and includes

87. *See* Neumann & Krieger, *supra* note 16, at 353–60 (comparing qualitative and quantitative approaches in empirical legal research).

88. We analyzed the data using two analyses to detect statistically significant differences, the Chi-squared test and the Mann-Whitney U test. The Chi-squared test is designed to analyze nominal, or categorical, data to ascertain if categories occur more frequently than would be expected by chance alone. The Mann-Whitney U test is an interval, or continuous, test that assesses whether one of two samples of independent observations tends to have larger values than the other by performing a hypothesis test that the medians are equivalent values.

guidelines about distinguishing between searches.[89] A search organized around a legal concept was a search where, for example, a subject used a legal concept (e.g., warranty of habitability) as a search term.[90] A search was identified as a fact-oriented search when search terms were drawn primarily from facts in the problem (e.g., "rapist and lease").[91] A search was deemed to be organized around a legal source when a subject identified a specific source and surveyed that source for applicable rules (e.g., the multiple dwelling law code).[92] A search framed using both a legal concept and a fact was coded as a legal concept search; a search framed using both a legal concept and legal source was likewise coded as a legal concept search.

The coding key also includes guidelines for identifying a new or refined search.[93] For example, a subject might begin by conducting a search for case law using the terms "rapist and lease."[94] That would constitute a coded search. The coding key instructs that if a subject then identified and began to research a specific legal principle (e.g., the warranty of habitability), that new research direction constituted a modified search and should be coded.[95] However, if a subject merely chose to access a new database or source to continue researching the same subject, that act was not coded as a new or refined search.[96]

We also identified and coded the category of legal concept to which the search was directed.[97] To do this, we developed a list of legal concepts relevant to or suggested by the problem.[98] We placed these legal concepts in five categories: real property (landlord-tenant), contract, tort and negligence, constitutional law, and sex-offender registration and conduct.[99] Any search coded as a search directed to a legal concept was also coded to indicate the category of legal concept to which the search was directed.

The summary of the types of search frames used by the subjects follows in Tables 1 and 2, and the summary of the category of legal concepts used in legal concept searches follows in Tables 3 and 4.[100] The results indicate that print subjects were more likely to frame

89. *See* Study Documents, *supra* note 20, Exhibit A, Coding Key, at 800–01.
90. *Id.*
91. *Id.*
92. *Id.*
93. *Id.*
94. *Id.*
95. *Id.*
96. *See id.* at 801.
97. *Id.* at 802–08.
98. *Id.*
99. *See id.*
100. *See infra* Tables 1–4.

their searches using legal concepts and electronic subjects were more likely to frame their searches using facts.[101] Print subjects employed legal-concept frames for their searches on thirty-two occasions, constituting 62% of their searches.[102] Electronic subjects employed legal-concept frames on thirty-four occasions, constituting only 22% of their searches.[103] Print subjects employed fact frames on five occasions, constituting 10% of their searches.[104] Electronic subjects employed fact frames on 101 occasions, constituting 64% of their searches.[105] All ten print subjects used at least one legal-concept frame and five used at least one fact frame.[106] Of the electronic subjects, seven used at least one legal-concept frame and all ten used at least one fact frame.[107]

The results also suggest that print and electronic subjects researched different legal concepts when they employed legal-concept frames.[108] A print subject was more likely to frame at least one search around real-property concepts, while an electronic subject was more likely to frame at least one search around contract- and tort-law concepts.[109] Print subjects framed twenty-seven total legal concept searches in terms of real-property concepts; electronic subjects framed seventeen total searches in terms of real-property concepts.[110] Of the print subjects, nine framed at least one search around real-property concepts; of the electronic subjects, only four framed at least one search around real-property concepts.[111] No print subject framed a search around contract or tort concepts; three electronic subjects framed at least one search around a contract concept (for a total of four contract frames) and three framed at least one search around tort concepts (for a total of seven tort frames).[112]

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101. *See infra* Table 1.

102. *See infra* Table 1.

103. *See infra* Table 1.

104. *See infra* Table 1.

105. *See infra* Table 1.

106. *See infra* Table 2.

107. *Id.* The observed difference in terms of the overall frequency of the use of fact frames was found to be significant under the Mann-Whitney U test, to 99% confidence. Additionally, the Chi-squared test found that the percentage of print subjects who used a fact frame was significantly different from the percentage of electronic subjects who used a fact frame and that the percentage of print subjects who used a legal concept frame was significantly different from the percentage of electronic subjects using a legal concept frame using a 90% confidence interval.

108. *See infra* Table 3.

109. *See infra* Table 3.

110. *See infra* Table 3.

111. *See infra* Table 4. This difference was found to be significant under the Chi-squared test.

112. *See infra* Table 4. Under the Chi-squared test, the percentage of print subjects who used a contract frame was significantly different from the percentage of electronic subjects using

Table 1—Framing of Searches

| | Legal-concept searches | Fact searches | Source-specific searches |
|---|---|---|---|
| Print | 32<br>(62% of total searches) | 5<br>(10% of total searches) | 15<br>(29% of total searches) |
| Electronic | 34<br>(22% of total searches) | 101<br>(64% of total searches) | 23<br>(15%of total searches) |

Table 2—Framing of Searches

| | Number of subjects employing a legal-concept search | Number of subjects employing a fact search | Number of subjects employing a source-specific search |
|---|---|---|---|
| Print | 10 | 5 | 5 |
| Electronic | 7 | 10 | 7 |

a contract frame using a 90% confidence interval; the percentage of print subjects who used a tort frame was significantly different from the percentage of electronic subjects using a tort frame using a 90% confidence interval.

Table 3—Subject of Legal-Concept Frames

| | Real Property (landlord-tenant) | Contract | Tort or Negligence | Constitutional Law | Sex-Offender Registration and Conduct |
|---|---|---|---|---|---|
| Print | 27 (84% of LC frames) | 0 | 0 | 0 | 5 (16% of LC frames) |
| Electronic | 17 (50% of LC frames) | 4 (12% of LC frames) | 7 (21% of LC frames) | 1 (3% of LC frames) | 5 (15% of LC frames) |

Table 4—Number of Subjects Employing Specified Legal-Concept Frames

| | Real Property (landlord/tenant) | Contract | Tort/ Negligence | Constitutional Law | Sex Offender Registration and Conduct |
|---|---|---|---|---|---|
| Print | 9 | 0 | 0 | 0 | 5 |
| Electronic | 4 | 3 | 3 | 2 | 2 |

We also analyzed the total number of search frames employed by subjects and the number of times that subjects switched from one search frame to another (frame oscillation).[113] Print subjects employed a total of fifty-two research frames; electronic subjects employed a total of 158 research frames.[114] With respect to frame

113. *See supra* Table 1.

114. *See supra* Table 1. The difference in the number of research frames used by print and electronic subjects was found to be significant under the Mann-Whitney U test, to 95% confidence.

oscillation, the mean frequency of research frame switches by electronic subjects was nearly three times that of print subjects.[115]

Viewed together, these results suggest that the research medium influenced how subjects conceived of and constructed searches. Print subjects were more likely to organize at least one search around a legal concept, and electronic researchers organized more of their searches around facts. With respect to searches organized around a legal concept, print subjects were more likely to frame a search around real-property concepts. Electronic subjects framed more searches (undertook a new research direction or refined a search) than print subjects and also switched research frames more often than print subjects.

Many have posited that electronic research enables and encourages a focus on facts or words, as opposed to concepts, when conducting research.[116] Those observations appear to be supported by this study's findings. Although electronic subjects framed slightly more searches around legal concepts overall than print subjects (thirty-four electronic versus thirty-two print), electronic subjects also framed more searches of all types than print subjects.[117] Electronic subjects predominantly searched using facts, constituting 64% of their total searches.[118] Notably, all electronic subjects framed at least one fact search, while three electronic subjects did not frame a single search around a legal concept.[119] By contrast, all print subjects framed at least one search using a legal concept, and half of the print subjects did not frame even one search in fact terms.[120]

An excerpt and search history from one electronic subject's transcript provides a useful illustration of the focus on facts in

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115. *See supra* Table 1. The mean frequency of research frame switches by print subjects was 1.7, and the mean frequency of research frame switches by electronic subjects was 5.7. This difference was also found to be significant under the Mann-Whitney U test, to 95% confidence.

116. *See e.g.*,Bast & Pyle, *supra* note 6, at 297; Bintliff, *supra* note 2, at 346–47; Margolis, *Authority without Borders*, *supra* note 6, at 935–36 ("[E]lectronic search technology pushes the researcher to focus on facts rather than legal concepts . . . . "); Stinson, *supra* note 6, at 253 ("[E]lectronic word searching emphasizes, by its very nature, particular words over concepts."). Because our study focused on examination of the subjects' reasoning process rather than their ultimate conclusions, our results do not speak to how successful print and electronic subjects were at discovering relevant rules or factually-similar cases. As summarized previously, one empirical study measuring research outcomes found that "students were slightly more successful at answering fact questions with the print digest than they were using . . . electronic resources" and that "[s]tudents were more successful at answering rule questions using a terms and connectors search than they were using the print digest or KeySearch . . . ." Peoples, *supra* note 6, at 670.

117. *Supra* Table 1.

118. *Supra* Table 1.

119. *Supra* Table 2.

120. *Supra* Table 2.

framing searches.[121] In the midst of her research, the electronic subject recognizes the potential applicability of a legal concept, the warranty of habitability—"I'm thinking of you know, nuisance and smells and like I said the warranty of whatever it's called, habituality or whatever it's called, goes through my head."[122] The subject then attempts to research that concept using primarily searches directed to fact terms. She states "so what's the word I'm looking for . . . rescind . . . not rescind . . . how do you say that word hab . . . habituality?"[123] The subject then runs the following series of searches, all within a roughly seven-minute period: "rapist w/s evict"; "warranty w/2 habituality"[124]; "lease w/s cancel w/s tenant"; "lease w/s cancel w/s tenant w/s fear"; "lease w/s cancel w/s tenant w/s rape"; "lease w/s cancel w/s tenant w/s rap!"; "evict! w/s rapist"; "evict! w/s felon"; "evict! w/s tenant w/p felon"; "evict felon tenant."[125]

As discussed in greater detail below, the observation that electronic research encourages an emphasis on facts rather than legal concepts (at least relative to print research) underlies a number of specific predictions about how the shift to electronic research may influence research outcomes and reasoning.[126] This study provides empirical evidence that electronic research does result in a greater reliance on fact terms in legal research, at least with respect to conceptualizing searches.[127] Although further empirical work is needed to test specific predictions about the significance of the relative emphasis on facts as opposed to legal concepts in electronic research, it is important to have confirmed a foundational observation underlying those predictions.

Additionally, the differences in the research process described in this section are of a nature and extent that support the idea that the research medium influences researcher reasoning and research outcomes.[128] Subjects using different media to conduct their research showed differences with respect to the number of searches they undertook, how often they changed research direction, whether they organized their research around facts or legal concepts, and what legal concepts they set out to research.[129] In some sense, this simply

121. *See* Study Documents, *supra* note 20, Transcript 1, at 11.

122. *Id.*

123. *Id.*

124. Notably, this search was coded as search framed as a legal concept search.

125. *See* Study Documents, *supra* note 20, Transcript 1, at 11–12.

126. *See infra* Part III.

127. See *infra* Part III for a discussion of the predicted impacts and how they could be tested through future empirical work.

128. *See infra* Part III.

129. *See supra* Tables 1–4.

provides data to confirm what many know through personal experience and have described in prior work: The process of conducting research electronically is a very different experience from the process of conducting research using print resources.[130] The importance of being able to tell this story using data, as well as personal experiences and anecdotes, is that it helps to close the above-described credibility gap and thereby creates new impetus to study and understand the influence of the electronic research medium.

### 2. Sources Accessed

The transcripts were also coded to identify the types of sources used by the subjects during their research.[131] The coding key identified four source categories (case law, statute or regulation, constitution, secondary source), and the transcripts were coded to indicate the category every time a subject accessed a source.[132] For print subjects we used the transcript, video recording, document-reader images, and notes taken by the proctor to identify the sources accessed by a subject. The coding key set forth guidelines to clarify when a subject "accessed" a source.[133] For example, for print subjects, no code was entered when a subject read the title of a source but did not remove it from the shelf.[134] For electronic subjects, sources retrieved through a search and appearing in a result list were coded only when the subject "clicked into" a specific source (e.g., accessed a case).[135]

The summary of the types of sources accessed by the subjects follows in Table 5.[136] The most notable observation is the lopsided reliance of print subjects on secondary sources and of electronic subjects on case law.[137] Print subjects accessed a case text on three occasions, constituting 2% of the sources that those subjects accessed, while electronic subjects accessed case texts on ninety-eight occasions, constituting 60% of the sources accessed by those subjects.[138] Print subjects accessed secondary sources on 131 occasions, constituting

130. *See supra* notes 6–7 and accompanying text.

131. Study Documents, *supra* note 20, Exhibit A, Coding Key, at 801–02.

132. *Id.*

133. *See id.* at 801.

134. *Id.* at 802.

135. *Id.*

136. *See infra* Table 5.

137. *See infra* Table 5.

138. *See infra* Table 5. The difference between print and electronic subjects with respect to how often they accessed case law was found to be statistically significant under the Mann-Whitney U test, to 99% confidence.

88% of the sources that those subjects accessed, while electronic subjects accessed secondary sources on thirty-six occasions, constituting 22% of the sources that those subjects accessed.[139] Additionally, print subjects accessed statutes and regulations less frequently than electronic subjects, accessing only fifteen such sources, constituting 10% of the sources accessed by those subjects.[140] Electronic subjects accessed a statute or regulation on twenty-nine occasions, constituting 18% of the sources accessed by those subjects.[141] We also analyzed the type of source used by a subject when initiating their research (i.e., the first type of source accessed during the research session): Of the print subjects, seven initiated their research using a secondary source and one initiated their research using a case law source. Of the electronic subjects, two initiated their research using a secondary source and five initiated their research using a case-law source.[142]

Table 5—Sources Accessed

| | Case law | Statute or Regulation | Constitution | Secondary sources |
|---|---|---|---|---|
| Print | 3 (2% of sources accessed) | 15 (10% of sources accessed) | 0 | 131 (88% of sources accessed) |
| Electronic | 98 (60% of sources accessed) | 29 (18% of sources accessed) | 1 (1% of sources accessed) | 36 (22% of sources accessed) |

139. *See infra* Table 5. The difference between the frequency with which print and electronic subjects accessed secondary sources was also found to be statistically significant using the Mann-Whitney U test, to 95% confidence.

140. *See infra* Table 5.

141. *See infra* Table 5. The difference between the frequency with which print and electronic subjects accessed a statute or regulation was found to approach significance under the Mann-Whitney U test, to 90% confidence.

142. The difference between print and electronic subjects with respect to initiating research with a secondary source was found to be statistically significant under the Chi-squared test with 95% confidence and the difference between print and electronic subjects with respect to initiating research with case law was found to approach statistical significance under the Chi-squared test (90% confidence value).

Print subjects thus accessed more secondary sources and electronic subjects accessed more case law. Furthermore, print subjects tended to start their research by referencing secondary sources, while electronic subjects were more likely to start their research by accessing case law. In some respects, this result likely reflects the physical realities of print research—one must generally use some type of secondary source as a finding tool to locate relevant cases. It is not feasible to simply pick up a reporter volume and begin reading. We cannot know to what extent our use of law-student subjects (generally less expert in print than electronic research) and our imposition of an artificial time limit influenced the results. Perhaps more experienced print researchers or researchers given more time would have accessed more cases. The results do, however, seem to be in accord with the prediction made by a number of scholars that electronic research discourages or deemphasizes the use of previously essential secondary findings aids, such as case digests.[143] A prior analysis of the user interface employed by electronic legal research databases found that "like Westlaw, LexisNexis consistently exhibits larger primary source databases more prominently than small primary or secondary sources, subtly encouraging use of the former and discouraging the latter."[144] In the present study, electronic subjects did access significantly more primary sources. The results are also in accord with an observation offered by one of the authors of this study in a prior article—electronic researchers are likely exposed to more case text than print researchers.[145]

Notably, many predictions about how conducting legal research using an electronic medium is likely to result in substantive impacts to research process, reasoning, and outcomes rest on the assertion that electronic researchers rely less on secondary sources and engage more directly with case law.[146] This study confirms the hypothesized difference underlying these predictions and should therefore, motivate more ambitious follow-up studies. These studies could be designed to directly test whether the consequences predicted

143. *See e.g.*, Berring, *Collapse of the Structure of the Legal Research Universe*, *supra* note 5, at 30 (observing that because of free text searching "there is no longer a need to rely on the West system to organize information before it reaches the researcher; the researcher can go to the database whenever she wishes and create a new search algorithm each time"); Margolis, *Authority Without Borders*, *supra* note 6, at 929–32 (describing the "Death of the Digest").

144. Jones, *supra* note 6, at 28.

145. Kuh, *supra* note 6, at 247–50 (positing that electronic researchers are exposed to more case texts than print researchers).

146. *See* Bintliff, *supra* note 2, at 348; Bast & Pyle, *supra* note 6 at 297–98; Kuh, *supra* note 6, at 237–50; Lien, *supra* note 6, at 89, 101.

to flow from electronic researchers' reduced reliance on secondary sources in fact arise and could employ more robust methods (e.g., include more experienced researchers as subjects and increase the length of the research session).

More generally, this study's findings reflect a very marked difference between print and electronic subjects in terms of reliance on secondary sources and case law. The great extent of the difference is important to note—secondary sources constituted 88% of the sources accessed by print subjects and only 22% of the sources accessed by electronic subjects, and case law constituted only 2% of the sources accessed by print researchers and 60% of the sources accessed by electronic subjects.[147] The lopsided reliance of print subjects on secondary sources and electronic subjects on case law presents a stark change to the research process that should move the profession and the academy to pay greater heed to the change in legal research medium, in particular because of the concern raised that decreased reliance on secondary sources could unmoor researchers from important legal context.[148]

### 3. Browsing

The transcripts were also coded to identify browsing by the subject. Browsing is often identified as a useful means for researchers to develop ideas and direct their research; however, many have lamented that electronic research renders browsing more difficult.[149] What is meant by browsing is often undefined or defined very broadly.[150] This study focused on browsing of finding aids that organize broad categories of legal information. Browsing was defined in the coding key to signify instances where the subject surveyed or scanned a table of contents, index, or similar compilation to identify topics warranting further research. As explained in the coding key, for a print subject, this included perusing the index of a case digest; for an electronic subject, this included reviewing the topics listed in an "Area of Law by Topic" screen. Print subjects' perusal of book titles

147. *See supra* Table 5.

148. Indeed, as discussed in Part II.B.4, the data not only show that electronic subjects reviewed more cases but also that electronic subjects oriented their research and conclusions more toward tort law concepts of little relevance to the problem. Our reading of the transcripts suggested that electronic subjects tended to locate, and then focus on, a large body of case law considering the potential liability, in negligence, of a landlord to a tenant when the tenant is injured by a third party on the owner's property.

149. *See e.g.*, Bintliff, supra note 2, at 342–43; Richard Delgado & Jean Stefancic, *Triple Helix Dilemma Revisited*, *supra* note 6, at 320–21 (lamenting that electronic research limits opportunities for "conceptual browsing" that, in print research, foster creativity).

150. *See* Jones, *supra* note 6, at 12 (describing "browsing to find and select databases").

were not coded and electronic subjects' perusal of a result list were not coded.[151]

Print subjects browsed on twenty-six occasions and electronic subjects browsed on six occasions.[152] When interpreting these results, it is important to recall that the study defined browsing more narrowly than the term might generally be used (to signify perusal) to encompass only perusal of indices, table of contents, or the like. The results suggest that print research may better support this type of browsing. Indeed, one print subject commented with surprise on the ease of browsing using print, as opposed to electronic, sources: "A lot of what I'm doing right now is as I'm flipping through I'm thinking to myself, gosh, when you do get something that you want it's so helpful because you see how many areas there are as opposed to on the computer, just the computer seems vastly simpler."[153]

The results also appear to support another scholar's analysis of interface design that found that tables of contents, popular name tables, and indices are not readily accessible through Westlaw's user interface oriented to law students[154] and concluded: [T]he use of . . . browsing within databases is discouraged by [Westlaw and LexisNexis]. Through code architecture, information foragers are led to keyword search within easily accessible primary law databases. In Westlaw in particular, available browsing options within certain databases are sometimes made quite cumbersome to access.[155] This study's finding that electronic subjects engaged in less browsing recommends further study of the predictions that have been offered about the effects of reduced browsing—for example, that it could limit creativity in legal argument[156] or prevent the development of an appreciation for legal context and concepts.[157]

### 4. Subject Conclusions

At the end of their research sessions, subjects were asked to state their tentative conclusions.[158] Each reference by a subject to a

151. *See* Study Documents, *supra* note 20, Exhibit A, Coding Key, at 802.

152. The difference in browsing frequency was found to be statistically significant under the Mann-Whitney U test, to 99% confidence.

153. Study Documents, *supra* note 20, Transcript 9, at 8.

154. *See* Jones, *supra* note 6, at 18–19.

155. *Id.* at 29.

156. *See* Richard Delgado & Jean Stefancic, *Triple Helix Dilemma Revisited*, *supra* note 6, at 320–21.

157. *See* Bintliff, *supra* note 2, at 342 ("By scanning through the related key numbers, we found cases that expanded or narrowed our rules, giving us a better understanding of the context and nature of the rules.").

158. *See, e.g.*, Study Documents, *supra* note 20, Transcript 1, at 16.

legal concept in the conclusion was coded to indicate the category of legal concept referenced.[159] The categories of legal concept were the same as those used to characterize search frames (real property (landlord-tenant), contract, tort or negligence, constitutional, or rules governing sex-offender registration and conduct).[160]

Print subjects referenced legal concepts twenty-seven times in their conclusions and electronic subjects referenced legal concepts twenty-three times in their conclusions.[161] With respect to the category of legal concept referenced, the results are summarized in Table 6 below.[162] Print subjects referenced the real property (landlord-tenant) concepts on sixteen occasions and electronic subjects referenced those concepts on only twelve occasions.[163] Of the print subjects, all ten subjects referenced a real-property concept in their conclusion; of the electronic subjects, only seven referenced a real-property concept in their conclusion.[164] Of the print subjects, six referenced a legal concept relating to sex-offender registration and conduct; of the electronic subjects, only two referenced a legal concept relating to sex-offender registration and conduct.[165]

Notably, we did not attempt to assess whether the conclusions offered by a subject were correct. We chose a problem that presented a somewhat novel question to encourage research.[166] There were many ways to approach the problem, and attempting to identify and code "correct" or "incorrect" answers would have required a level of judgment not readily amenable to analysis. Identifying the legal concepts referenced in subjects' conclusions was more easily accomplished and could provide some insight into whether and how the research medium used by the subjects influenced the outcome of their research.

The differences between print and electronic subjects in terms of the type of legal concepts referenced in their conclusions were not as marked as the differences observed for other parameters.[167]

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159. Study Documents, *supra* note 20, Exhibit A, Coding Key, at 802–03.

160. *Id.*

161. *See generally* Study Documents, *supra* note 20, Transcripts.

162. *See infra* Table 6.

163. *See generally* Study Documents, *supra* note 20, Transcripts.

164. *See generally id.*

165. Under the Chi-squared test, the percentage of print subjects who referenced a real property concept was significantly different from the percentage of electronic subjects who referenced a real property concept using a 90% confidence interval. Similarly, the percentage of print subjects who referenced a legal concept relating to sex offender registration and conduct was significantly different from the percentage of electronic subjects who referenced a legal concept relating to sex offender registration and conduct using a 90% confidence interval.

166. *See supra* notes 38–44 and accompanying text.

167. *See infra* Table 6.

Nonetheless, the results do suggest that the research medium may have exerted some influence on how subjects conceived the results of their research. The transcripts indicated that electronic subjects seemed to spend much more time researching tort theories than print subjects and that print subjects seemed to focus more on real property concepts. This impression appears to be reflected in the legal concepts referenced by subjects in their research summaries, as all print subjects offered a conclusion relating to real property law and more electronic subjects than print subjects offered a conclusion grounded in tort law.[168] It also appears to be reflected in the number of subjects who employed a real-property or tort research frame. As set forth in Table 3, nine print subjects and only four electronic subjects employed a real-property research frame; three electronic subjects and no print subjects employed a tort research frame.[169] This suggests that the research medium may have influenced not only how subjects researched the problem, but also the legal concepts they deployed to conceptualize both their research and the legal questions presented in the problem.

Our data do not explain the reason for electronic subjects' relative focus on tort concepts. However, after researching the problem and reviewing the transcripts, the study suggests one hypothesis. The problem's hypothetical client sought advice primarily about options relating to her lease.[170] However, there is a large body of case law that considers the potential liability, in negligence, of a landlord to a tenant when the tenant is injured by a third party on the owner's property. Some electronic subjects seemed to stumble upon and then get lost in that case law and ultimately struggled to assess its relevance to the problem. This could be related to the fact that, as compared to print subjects, electronic subjects could more readily access, and relied more heavily upon, case law.

168. *See generally* Study Documents, *supra* note 20, Transcripts.

169. *See supra* Table 3.

170. *See, e.g.*, Study Documents, *supra* note 20, Transcript 1, at 4.

Table 6—Number of Subjects Who Referenced Specified Legal Concepts in Conclusion

| | Real Property (landlord-tenant) | Contract | Tort or Negligence | Constitutional Law | Sex-Offender Registration and Conduct |
|---|---|---|---|---|---|
| Print | 10 | 1 | 3 | 1 | 6 |
| Electronic | 7 | 0 | 5 | 2 | 2 |

### 5. Other Findings

We also coded when subjects expressed an interest in researching using a different medium (i.e., when a print subject expressed a desire to research using electronic media or when an electronic subject expressed a desire to research using print media).[171] Nearly half of the print subjects expressed an interest in researching the problem using an electronic medium (one particularly frustrated subject did so on five occasions);[172] none of the electronic subjects expressed a desire to access print sources. Both print (two)[173] and electronic subjects (six)[174] expressed a desire to use an Internet search engine, such as Google. One print subject commented that she was dealing with "pages of information" and lamented her inability to use a word search to skip directly to text of interest; she then remarked that researching using print sources "seems fun but old fashioned and wasteful."[175] Another print subject was more blunt, commenting that being limited to print sources "sucks," and later, "I need the damn Internet."[176] These results appear to confirm the common observation that law students prefer electronic research.[177] The findings also underscore our previous recognition that this study is limited by its reliance on law students, a group that is, perhaps, not comfortable with print research.

171. Study Documents, *supra* note 20, Exhibit A, Coding Key, at 804.
172. Study Documents, *supra* note 20, Transcript 9.
173. *See* Study Documents, *supra* note 20, Transcripts 3 & 4.
174. *See* Study Documents, *supra* note 20, Transcripts 1, 2, 13, 18B, 21 & 22.
175. Study Documents, *supra* note 20, Transcript 9, at 12.
176. Study Documents, *supra* note 20, Transcript 3, at 3, 8.
177. *See* Peoples, *supra* note 6, at 674–75.

There were a number of other parameters that we coded for, but for which the study did not demonstrated differences between print and electronic subjects that warrant discussion. These include statement of legal hypothesis, identification of legal concepts in hypotheses and analysis, references to client interests, and identification of future steps in the research and investigation.[178] The coding key is included in Exhibit A and describes each of these parameters in detail.[179]

That we did not observe a difference warranting discussion with respect to these parameters was sometimes a result of the way we defined the parameter. For example, as specified in the coding key, with respect to legal hypotheses, we did not code a subject's statement of a legal hypothesis where the subject ultimately researched the stated hypothesis.[180] We made this decision to avoid overstating a subject's emphasis on a particular legal concept because the subject's search—and the legal concept to which it was directed—was also coded. However, the decision to limit the definition of a legal hypothesis in this manner largely robbed that parameter of content since subjects often stated a hypothesis that they then researched. In other cases, the data did reveal some difference, but not one that, using our judgment and principles of qualitative analysis, we thought warranted discussion. For example, we identified ten different client interests.[181] With respect to the client's interest in remaining anonymous, six print subjects referenced that interest on eleven total occasions; only three electronic subjects referenced that interest on four total occasions.[182] With respect to the remaining client interests, references by print and electronic subjects were, however, generally similar.

## III. CONCLUSION

The purpose of this study was to compare the conduct of law student legal research using print and electronic media. The study's comparison reveals substantial differences. Researchers using different media not only used different physical mechanisms to conduct research, but they conceived of and structured their research differently. Print and electronic subjects framed their searches

178. *See* Study Documents, *supra* note 20, Exhibit A, Coding Key, at 800–04.

179. *See id.* In addition, study data for these parameters is available, see Study Documents, *supra* note 20.

180. *See* Study Documents, *supra* note 20, Exhibit A, Coding Key, at 800.

181. *See id.* at 803.

182. Study data for this parameter is available. *See* Study Documents, *supra* note 20.

differently, researched different legal concepts, accessed different types of sources and in different order, reviewed the sources that they accessed differently, and discussed different legal concepts when describing their research conclusions. Although the study focused on and its findings speak primarily to the research process,[183] the extent and breadth of the differences observed in the research processes engaged in by print and electronic subjects suggest that the research medium may influence research outcomes and legal reasoning strategies more broadly, particularly when considered in light of the interconnection between reasoning and analysis and sound legal research:

> Legal research requires a combination of factual knowledge and higher-level intelligence. Factual knowledge involves recognition of objects, activities, and locations. A higher level of intelligence enables the researcher to create, manipulate, and apply abstract concepts to the given facts. High-level perception involves recognition of relationships and abstract ideas and concepts. It draws meaning out of objects, activities, and locations. This type of insight allows the researcher to think in the abstract, recognizing patterns in the facts, issues, and primary sources and regrouping them to recognize new patterns. The researcher may recognize similarities, distinctions, and relationships. Out of these patterns, insight may allow the researcher to notice analogies and build abstract conceptual legal frameworks.[184]

This study thus provides strong support for the legal community to better understand the potential impacts of the changed legal research environment. More specifically, this study recommends further empirical work to test specific predictions that prior scholars have offered about the impacts of the shift to electronic legal research. Scholars have previously identified differences between print and electronic research processes and hypothesized that these differences are likely to give rise to more substantive impacts on research outcomes and reasoning.[185] Some of the differences between print and electronic research processes that formed the basis for these predictions had been identified based largely on personal experience, observation, and anecdote. In some cases, this study's findings provide empirical evidence of an asserted, but previously unconfirmed, difference between print and electronic research processes. That there is now empirical evidence to support some of the underlying assertions about research process differences should provide new motivation to

183. The potential impact of research medium on legal reasoning is of significant interest. After much discussion of study design, it proved too difficult to design and implement, within existing resource constraints, a study aimed directly at identifying the influence of medium on legal reasoning.

184. Bast & Pyle, *supra* note 6, at 296.

185. *See, e.g.*, Bast & Pyle, *supra* note 6, at 296–98; Lien, *supra* note 6, at 88–101, 126–34.

test the predictions scholars have made about how those differences in process may influence research outcomes and reasoning.

Some scholars, for example, have argued that electronic researchers will have a harder time than print researchers developing a sense of the structure of law (recognizing the relationship between legal concepts) and crafting sophisticated arguments in part because electronic researchers are exposed to fewer secondary sources that organize law by concept.[186] Many scholars have similarly postulated that a relative focus on facts and cases as opposed to legal concepts and secondary sources could negatively affect research outcomes and legal reasoning and analysis.[187] The twin observations that electronic research leads to an emphasis on facts and primary sources undergird many predictions that electronic research could negatively affect law students' legal reasoning.[188] As explained by one scholar lamenting the focus on facts in electronic research:

> Because CALR [computer-assisted legal research] doesn't research issues, one can easily miss the broader statements of policy and principles that are included as a matter of course in the digests. Relying exclusively on computer results limits your overall knowledge to your information retrieval request and hinders your ability to see the broader picture because of the uniqueness of the search terms you must choose. The lack of structure in computer research can make your reasoning process lumpy indeed.[189]

Another scholarly article offers:

> An attorney researching online typically does a word search, looking for cases containing the same facts. If the search retrieves a number of cases with similar facts, the attorney may be satisfied with the outcome. However, a search that discovers factually similar cases does not also offer a theory of law as its natural result. Additional work and creative energy on the part of the researcher are required to formulate a legal theory. The CALR researcher who remains focused on facts may neglect broader issues and legal concepts, and may be oblivious to the general perspective.[190]

This study's findings suggest that electronic researchers can, in fact, be expected to emphasize fact terms as compared to legal concepts in their research and to rely more on primary sources and less on secondary sources than print researchers. Having now confirmed these basic, underlying premises, a more ambitious

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186. *See* Bintliff, *supra* note 2, at 348; Bast & Pyle, *supra* note 6, at 297–98; Lien, *supra* note 6, at 89, 101.

187. *See* Bast & Pyle, *supra* note 6, at 297–98; Lien, *supra* note 6, at 88, 101 (lamenting "the process of rapid rule extraction that often accompanies texts located through the use of isolated word searches" and the fact that "online research generally highlights the factual aspects of a case rather than broad legal concepts," and expressing concern that lawyers researching electronically "all too frequently focus on a limited line of authorities that uses similar language or facts and overlook creative arguments based on analogies to broader lines of reasoning").

188. *See* Bast & Pyle, *supra* note 6, at 297–98; Lien, *supra* note 6, at 88–101, 126–34.

189. Bintliff, *supra* note 2, at 348.

190. Bast & Pyle, *supra* note 6, at 297–98.

empirical study might attempt to directly test whether the research medium influences an understanding of legal concepts or the sophistication of the arguments developed through research.

To provide another example, one of the authors of this study previously asserted that electronic researchers were likely to be exposed to more and different case texts than print researchers and that print researchers were likely to be guided to a greater extent by secondary finding aids than electronic researchers.[191] These assertions about differences in the research process, which appear to be supported by this study's findings, formed the basis for two predictions about the influence of electronic legal research: (1) that print researchers were likely to show greater uniformity than electronic researchers with respect to the legal theories that they identify as relevant; and (2) electronic researchers are more likely to unknowingly advance long shot or marginal arguments.[192] A more ambitious follow-up study might directly test both of these predictions.

Because of resource constraints, this study only scratches the surface in terms of exploring the influence of the research medium on the research process and does not directly explore the potential influence of medium on research outcomes or legal reasoning. The differences that the study reveals are, however, numerous and marked. We hope that the present results generate the commitment of resources to conduct future studies to help us better understand the impacts of the shift to electronic research, generally. We also hope that this study motivates the empirical testing of some of the specific predictions that have been offered about the more substantive impacts of the shift to electronic research. A number of these predictions gain new weight and urgency because this study's findings confirm some of the core observations that underlie them. This study thus helps to minimize a credibility gap—the lack of evidence to support reasoned predictions about the potential substantive impacts of the shift to electronic legal research—and, by doing so, supports a call to action for further attention and research.

191. *See* Kuh, *supra* note 6, at 237–50.

192. *See id.* at 256–67.

APPENDIX: EXHIBIT A

# Solicitation Memo

**SEEKING VOLUNTEERS FOR STUDY – $30 FOR NINETY MINUTES**

We will be conducting a short research study on the development of legal reasoning skills by law students at the Law School. We are seeking second and third-year students to serve as volunteer subjects for this study.

In this study, you will be given a short legal problem, provided with time to conduct research, and then asked certain questions about the problem. Your research and responses to these questions will be recorded. The entire session for each student should take no longer than 90 minutes. Each participant in the study will receive $30 in compensation.

**THIS STUDY IS COMPLETELY ANONYMOUS.** Responses will be kept in strict confidence, although generalized (anonymous) data may be submitted for publication to an appropriate professional journal or potential grant sponsor (as preliminary data) at a later date. Subjects will **NOT** be graded on this problem. This study will not affect the Law School's or any professor's assessment of the subjects' abilities. Al recordings will be stored in a secure location with no identifying information.

If you are willing to participate, please email us by March 15. In your email, please indicate whether you have experience conducting legal research using print source (i.e., library/book research as opposed to research using electronic databases such as Westlaw).

If you would like more information or have any questions about this study, please contact one of us.

Professor Stefan H. Krieger, lawshk@hofstra.edu
Professor Katrina F. Kuh, Katrina.kuh@hofstra.edu

# Problem

New client Denise Lombard, a recent college graduate, came to your office on February 1, 2011. She lives at 1520 Village Ave., Rockville Centre, N.Y., Apartment 3F. The building is a three-story structure with 24 units. She has lived in the building by herself for the past three years. Her landlord is Breslin Realty; she signs yearly leases with the term beginning February 1 of each year. The building is not subject to rent regulation.

Everything went well with their tenancy until three months ago. Last October, a new tenant (Tom Schmidt) moved into the apartment next to hers (3E). she hasn't had any problems with Mr. Schmidt, but a few weeks ago her downstairs neighbor told her that Mr. Schmidt was recently released from prison after being convicted of rape and is suspected or raping other women. Ms. Lombard is very scared that a convicted serial rapist is living next to her and is afraid to go out at night.

She called Breslin and spoke with a manager Jeff Ciaffa. Ciaffa called her back a few days later and said there was nothing they could do. Mr. Schmidt has a valid lease and has paid all his rent on time. Breslin simply cannot break the lease.

Denise wants to know her options. She loves her apartment: it's close to the LIRR station with regular trains to Manhattan where she works, it's well maintained, and she has friends in the area. But she's deathly afraid of being in her apartment alone. Also, she tells you that whatever happens, she doesn't want Mr. Schmidt to find out she's been complaining.

Please conduct legal research on this issue using solely electronic [print] resources. This problem takes place is New York. When you are finished, we will ask you to orally summarize your preliminary findings. If you have not finished your research within 80 minutes, we will ask you to summarize orally your conclusions up to that point.

Research assistants: If the print subjects either ask or attempt to go beyond the reading room area, just say, "For logistical reasons, please remain in the reading room area." (Sean, please let us know if this problem arises.)

# Script

**Study Script/Dummy Sheet**

Before the subject arrives:

1. Turn on laptop and login
2. Confirm Wireless Internet signal to HU Preferred network
3. Start up Panopto and login
4. Connect microphone and webcam and confirm that they are working (print subjects will require the wireless microphone)
5. Confirm that Panopto will upload to "Kriger's Project" folder
6. Confirm that the document reader is clearly recording material

After the subject arrives:

1. Connect microphone to subject (if a print research subject, otherwise see step 2)
2. Confirm that Panopto is picking up audio and video recording
3. START RECORDING!

Thank you for your participation today. This is a short anonymous research study on the development of legal reasoning skills by law students.

This is not a test of your abilities, but rather an attempt to determine how people think about legal problems. You will not be graded, and your answers will not be revealed to your professors. Your responses will be recorded to ensure accuracy. These recordings will not be shared with anyone outside of the research team.

First you will be given a sample problem to work through. This is only a warm-up and is not part of the study. This is just so that you feel comfortable with the process of voicing your thoughts aloud. When answering the question please verbalize your thoughts as naturally as possible. Please do not explain or rationalize your thoughts but rather communicate them in a free flowing manner. The easiest way to do this is to go through your normal thought process but say everything aloud as if no one else were in the room.

4. PRESENT SUBJECT WITH LSAT PROBLEM.

Please take your time reading through this sample problem. You do not need to read the problem out loud, but please voice any thoughts you have while mentally working through the problem as naturally as possible. The key here is to "think aloud" as freely as possible. Please Verbalize when you have decided on an answer. The answer itself is less important than your thought process leading up to the answer.

5. After the subject has completed the sample LSAT Problem read the following:

Thank you for completing this sample problem. In a moment I will provide you with a legal research assignment. Take as long as you feel is necessary to answer the problem. Just tell me when you are finished, and I will ask you to orally provide your answer. If you have not finished after 80 minutes, I'll ask you to orally give your tentative conclusions. Feel free to take notes on the laptop or organize your research in any way that you feel comfortable. Again, it is important that you verbalize your thought process throughout your research. If at any point it seems that you are not thinking aloud, I will prompt you to please express what you are thinking verbally. Please work at your own pace and answer the problem to the best of your abilities. Please be aware that this problem takes place in New York State.

**For Online Research Subjects:**

At this time please log in to either Lexis Nexis, or Westlaw, or both (whichever you prefer). Do you have any questions?

**For Print Research Subjects:**

You will have access to all of the necessary books (point to all the stacks of books in the reading room). Please continue to verbalize your thought process as you move about the book shelves. You can bring as much of the material back to this table as you see fit. Then please place any materials under the document reader (one page at a time) to review it. Do you have any questions?

6. HAND THE SUBJECT THE PROBLEM and tell them that they can begin now.

****REMEMBER: Use Think Aloud Protocol. Ask probing questions, i.e.,**

**1. "Say whatever comes into your head"**

**2. "What else?"**

7. If a subject is finished before 80 minutes, ask him/her to give their answer. Keep asking, "Anything else?" until the subject says, "No."

8. AFTER 75 MINUTES, PROVIDE A 5 MINUTE WARNING. Then, at 80 minutes ask the subject to give his/her tentative conclusions. Keep asking, "Anything else?" until the subject says, "No."

End with: "Thank you for your time today. We ask that you not discuss the study, the legal problems presented to you or any of your answers with anyone else. This is to ensure that other potential participants are not tainted and that we are able to gather quality data."

**STOP RECORDING**

# Coding Key

## CODING KEY

### STATEMENT OF LEGAL HYPOTHESIS

Code any statement of a legal hypothesis by a subject when the subject does not ultimately research the legal hypothesis.

H Statement of legal hypothesis

A subject states a legal hypothesis when he/she, without research, brainstorms whether a substantive legal doctrine or rule exists or applies or posits the possibility that a substantive legal doctrine or rule might exist and apply. If a subject ultimately researches the hypothesis, code as a framed search (see below), and do not also code as hypothesis.

Every hypothesis pertaining to a legal concept should also indicate which category of legal concept the hypothesis relates to using legal concept codes that follow below. Thus, if a subject queries whether there might be grounds for a tenant to break her lease without penalty based on fear of physical injury, that would be coded "H-LC1".

### FRAMING SEARCHES

Code the method used by a subject to frame, or organize, searches. For each new or refined search conducted by a subject, discern whether the search was organized using legal concepts or rules, facts, or legal sources (cases, statutes, regulations, etc.) and code as indicated below. Codes should be marked on the transcript. As discussed below, after the coding has been reconciled, the codes for search frames will also be sequentially numbered using a color-coded system.

F1 Search using a legal concept or rule
F2 Search using facts
F3 Search directed to a specific legal source

Guidelines:

- A search organized around a legal concept is when a subject uses, for example as a search term or to locate discussion within a book, a legal concept like "warranty of habitability." A fact-oriented search is when a subject uses search terms drawn primarily from facts in the Problem (for example, "rapist and lease") including use of fact terms or the Descriptive Word Index to locate cases within a case digest. If a subject frames a search using both legal concepts and facts, code as "F1." A search organized around a legal source is when a subject identifies a specific source (for example, a particular housing code) and surveys that source for applicable rules. If a subject frames a search using both legal concepts and legal sources, code as "F1."

- Ascertaining when a subject takes a new research direction or refines a search may not always be clear. A new direction in research means that the subject begins to conduct research related to a new subject or rule. A subject may refine a search by, for example,

identifying a specific legal principle within a larger body of law to research. A new or refined search does not include when a subject chooses to access a new database or source to continue researching the same subject. Merely mentioning that a subject/rule might warrant further research without conducting that research would not qualify. Similarly (a) repeated reference(s) to a search topic while searching the same source, etc. does not constitute a new search and should not be coded again.

- Every search that is coded as a search organized around a legal concept ("F1") should also indicate which category of legal concept the search relates to using legal concept codes that follow below. Thus, a new or refined search of landlord tenant law relating to the warranty of habitability would be coded "F1-LC1".

**BROWSING**

Code when the subject surveys/scans a table of contents, index, or similar to identify topics warranting further research. Examples would include perusing the index of a case digest or reviewing the topics listed in an "Area of Law by Topic" screen. A print subject's perusal of book titles should not, however, be coded.

B Browsing

**ACCESSING LEGAL SOURCES**[1]

Code when the subject accesses (obtains, views, reviews) a legal source. For print subjects, coding will be conducted using the transcript and video recording, including images recorded using the document reader, and notes from the interviewers. For electronic subjects, coding will be conducted using the transcript and screen/keystroke capture. All of these records of the study sessions should be used to discern as best as possible the sources accessed by the subject. Codes should be marked on the transcript. As discussed below, after the coding has been reconciled, the codes for legal sources will also be sequentially numbered using a color-coded system. Additionally, keep a separate list of all sources accessed by the subject. For electronic researchers, also list every search conducted.

S1 Case law
S2 Statute/regulation
S3 Constitution
S4 Secondary sources

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[1] Note that coding will be conducted for this information using, in addition to the transcripts, video, document reader, and screen capture material. All other coding will be conducted using primarily the transcripts with reference to other recordings only as necessary to resolve ambiguity. Where a coder encounters significant ambiguity in the transcript with respect to the framing of searches, identification of legal concepts, or other coding parameter and the coder believes that ascertaining the source being accessed by the subject may prove useful for resolving that ambiguity, the coder will so note on the transcript.

Guidelines for print subjects:

- When a subject simply looked at the title of a source but did not remove it from the shelf or open it, the source need not be coded.

- When the transcript or recording reflects that a subject removed a source from the shelf and opened the source, that source should be coded even if the subject ultimately concluded that the source was not relevant.

Guidelines for electronic subjects:

- When a subject runs a search and thereby pulls up a list of results, the search and the results list should be coded once. A subject's perusal of a list of results should not be coded again unless or until the subject "clicks into" a specific source (for example, a case). A new code (for example, for case law) should be added every time the subject opens a new source (for example, a case).

**IDENTIFICATION OF LEGAL CONCEPTS**

References made by the subject to a legal concept (subject, doctrine, rule) should be coded using the appropriate legal concept coding category at three different junctures. First, each search that is coded as a search organized around a legal concept ("F1") should also indicate which category of legal concept the search relates to ("F1-LC2"). Second, a subject's reference to a legal concept that includes analysis (as when the subject applies the legal concept to the problem facts) should be coded as a standalone "LC" code. Third, a subject's reference to a legal concept in the problem answer, or conclusion, at the close of the transcript should be coded using the legal concept code prefaced with a "C," as in "CLC1". Note that references to a legal concept that do not fall into one of the above categories (are not part of a search frame, do not include analysis, or do not appear in the answer statement/conclusion) should not be coded.

LC1 Landlord/tenant
LC2 Contract
LC3 Tort/negligence
LC4 Constitutional
LC5 Rules governing sex offender registration/conduct

Guidelines:

- A non-exhaustive list of legal concepts grouped by coding category follows at the conclusion of the Coding Key to assist in identifying the appropriate coding category. When a coder believes that the subject references a legal concept that does not fit within one of the existing coding categories, he/she should consult with the other coder(s) to discuss whether this reference is covered by an existing coding category or needs a new code.

- Specific statutory provisions are identified in some legal concept descriptions. Reference to the statute or specific statute section by the subject is not required for the code to apply; a general description of the legal concept is sufficient. The statutes are identified to assist the coder in identifying the applicable legal concept when a subject refers to a specific statute.

- Concepts relevant to assessing the rights and responsibilities of the landlord/tenant under the lease (for purposes of assessing possible remedies under the lease) overlap with concepts relevant to assessing the possible negligence of the landlord (in support of a potential suit for damages). For example, a landlord's failure to protect a tenant from a dangerous condition can constitute both a breach of the warranty of habitability under the explicit language of the lease or implied requirement of residential landlord/tenant law (subject to remedies under the lease) and support a common law negligence action seeking damages from the landlord in the event that the tenant is harmed. When the purposes for which the subject is researching a concept are clear (lease interpretation/enforcement v. tort liability), code accordingly. If the subject does not reference the warranty of habitability (either by using that terminology or referencing more generally the concept), code under tort.

- Subjects may state out loud a series of legal concepts while reading through a table of contents or similar material. When a legal concept is merely stated or listed but is not otherwise pursued or reflected upon, that passing reference should not be coded.

**REFERENCES TO CLIENT INTERESTS**

Code all references that the subject makes to the client's interests.

Interests identified or implied in Problem:

C1 Personal safety
C2 Eviction of Tom Schmidt
C3 Retain apartment
C4 Anonymity (Schmidt does not learn she complained)
C5 Know her options

Other Possible Interests:

C6 Avoid penalties/ rent for breaking lease if she elects to move
C7 Peace of mind
C8 Transactions costs of legal process
C9 Leave apartment
C10 Move to another apartment in the building

**IDENTIFICATION OF FUTURE STEPS IN THE RESEARCH/INVESTIGATION**

Code a subject's identification of future steps in the research or investigation.

ID1 Conduct additional fact investigation
ID2 Conduct additional legal research
ID3 Seek help from librarian

Note that this refers to future steps in the research or investigation to be taken after, as a follow up to, the legal research presently being conducted. A statement "next I will search for cases using the digest" should not be coded. A statement "I would probably want to obtain a copy of the lease and review it" should be coded.

**REFERENCES TO USE OF OTHER RESEARCH MEDIA**

Code when a subject refers to the need or interest in researching a matter using a different medium.

DM1 Print subject's reference to electronic media
DM2 Electronic subject's reference to print media
DM 3 Subject's reference to Internet search engines (such as Google)

**SEQUENTIAL NUMBERING OF LEGAL SOURCES AND SEARCH FRAMES**

After codes have been reconciled, the codes for legal sources accessed and framing searches should be numbered sequentially. The sequential numbering should be added to the existing code and so would read, for example, for the first three legal sources accessed 1.51, 2.54, 3.51, etc. Sequential numbering for legal sources should be entered using red ink; sequential numbering for search frames should be entered using green ink.

**Legal concept categories (examples)**

| | |
|---|---|
| REAL PROPERTY, LANDLORD/TENANT | LC1 |
| General reference to warranty of habitability, statutory and/or implied<br><br>In every lease, a landlord warrants that occupants shall not be subjected to any conditions which would be dangerous, hazardous or detrimental to their life, health or safety, Real Property Law § 235-b. | |

| | |
|---|---|
| General reference to duty to protect tenants<br><br>The landlord has a duty under the lease/landlord-tenant law to protect a tenants from foreseeable harm | |
| General duty to protect tenants from third party acts<br><br>A landlord has a duty under the lease/landlord-tenant law to protect a tenant from third party acts. | |
| Duty to protect requires showing of foreseeability<br><br>Under a lease/landlord-tenant law, a landlord is only required to protect tenants from a third party's acts only if the acts are foreseeable. | |
| Specific duty to maintain premises to protect tenants from foreseeable harm by third parties<br><br>Landlord has a duty under the lease/landlord-tenant law to maintain premises to protect a tenant from foreseeable harm by third parties including maintaining adequate security. | |
| No duty to evict sex offender<br><br>Landlord has no authority and no duty under the lease/landlord-tenant law to evict a registered sex offender based solely on that designation to protect tenants. | |
| General reference to express covenant of quiet enjoyment | |
| Specific reference to presence of sex offender as giving rise to violation of express covenant of quiet enjoyment<br><br>Held that landlord failed to satisfy express covenant of quiet enjoyment when registered sex offender moved into adjoining apartment | |

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| Property owners liable for damage resulting from unlawful use of property, Real Property Law § 231(2) | |
| General grounds and procedures for eviction<br>Grounds and procedures for a landlord's eviction of a tenant including non-payment, holdover, and violation of the terms of a lease | |
| Termination of tenancy<br>Grounds and procedures for a landlord's termination of a lease, Real Property Law § 232. | |
| Surrender of premises<br>Tenant may surrender possession and is not thereafter liable for rent when building destroyed or uninhabitable, Real Property Law § 227. | |
| Rent regulation<br>Leases for apartments in certain towns, villages, and cities are subject to set rent annual rent adjustments and required lease provisions. | |
| CONTRACT | LC2 |
| General reference to unconscionability<br>Courts may refuse to enforce or limit the application of unconscionable leases or clauses of a lease, including abandonment clauses, Real Property Law § 235-c(1) | |
| Specific reference to unenforceability of abandonment clause because of presence of registered sex offender<br>Abandonment clause held unenforceable when there is no good cause exception and family abandons after a registered sex offender moves into adjoining apartment | |
| General reference to covenant of good faith and fair dealing | |

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| Specific reference to landlord's violation of covenant of good faith and fair dealing for failing to allow early lease termination because of presence of registered sex offender<br><br>Landlord violates covenant of good faith and fair dealing by failing to allow early termination of lease when family abandons after a registered sex offender moves into adjoining apartment | |
| TORT/NEGLIGENCE | LC3 |
| General reference to dangerous condition<br><br>Landlord can liable for negligence in allowing a dangerous condition to exist in a dwelling. | |
| Specific reference to third parties as a dangerous condition<br><br>Allowing dangerous third parties to remain on the property can be a dangerous condition | |
| Common law duty to take precautionary measures to protect tenant from dangerous condition created by third party<br><br>Landlord may be negligent/liable for failing to take reasonable precautionary measures to protect tenant from reasonably foreseeable criminal acts of third persons | |
| Duty to remove third parties from property<br><br>Landlord may be negligent/liable for failing to remove dangerous parties from property | |
| Showing required to establish foreseeability<br><br>For landlord to be liable for negligence, harm by third persons must be foreseeable | |
| CONSTITUTIONAL LAW | LC4 |
| Due process rights of convicted sex offenders | |

| SEX OFFENDER REGISTRATION AND CONDUCT | LC5 |
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| Rules requiring sex offenders to register and limiting when they can live, work, etc. | |