

WHERE CAN YOU GO TODAY?:  
THE COMPUTERIZATION OF LEGAL EDUCATION FROM  
WORKBOOKS TO THE WEB

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*A course web page should be required for all classes.<sup>1</sup>*

Considering the critical role played by universities in the development of the Internet and the World Wide Web ("WWW" or "Web"),<sup>2</sup> it should not come as a surprise to find these same institutions playing a prominent role in the continued growth of what has become a worldwide phenomenon.<sup>3</sup> Since the advent of the first Web browser in 1993,<sup>4</sup> numerous faculty and students worldwide have embraced the plethora

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1. Comment by Anonymous Student, Columbia Law School Legal Research and Writing Course Evaluation (Fall 1996) (on file with author) [hereinafter Course Evaluation].

2. The precursor to the modern Internet was Arpanet, a wide-area network with nodes established at the University of California at Los Angeles, the University of California at Santa Barbara, the University of Utah, and SRJ International in Menlo Park, California. See WIRED STYLE: PRINCIPLES OF ENGLISH USAGE IN THE DIGITAL AGE 14-15 (Constance Hale ed., 1996) [hereinafter WIRED STYLE].

For those unfamiliar with the Internet, a brief explanation follows. Simply stated, the Internet is a network of networks. Networks have the ability to link computers to one another; the Internet magnifies this capability by linking together the networks themselves. Therefore, once a user has obtained the means to get on the Internet, he or she can easily access material contained on networks worldwide.

Although the Internet and the World Wide Web are often referred to interchangeably, the Web is actually just an application of the Internet. The Web uses a hypertext system, commonly called Hypertext Markup Language ("HTML"), enabling users to easily link between electronic documents.

By using the Internet as the means of "transportation," linking can take place within a single document or between two documents at opposite ends of the earth, even when the user is unaware of the location of a specific document — the rapid connectivity of the Internet makes distance effectively irrelevant. The Web's popularity stems from its ability to accommodate text, pictures, audio, and video, as well as its operating system independence.

In addition to the Web, there are several other integral Internet applications. Electronic mail, or e-mail, has become a popular and inexpensive form of communication. E-mail documents travel over the same communications network as Web documents, traveling from one e-mail address to another. E-mail can be used not only to correspond with individuals, but also as part of larger discussion groups where a single e-mail message is distributed to everyone in the discussion group.

3. See Gautam Naik, *On-Line: In Digital Dorm, Click on Return for Soda*, WALL ST. J., Jan. 23, 1997, at B1.

4. Marc Andreessen, who later co-founded Netscape Communications Corporation, created the first Web browser, called NCSA Mosaic, at the University of Illinois at Urbana-Champaign. See WIRED STYLE, *supra* note 2, at 27, 32.

of possibilities presented by networked classes,<sup>5</sup> chat groups,<sup>6</sup> and WWW homepages.

Although segments of legal academia have joined in this rapid development,<sup>7</sup> many faculty members remain somewhat wary of these technological changes.<sup>8</sup> In fact, at a time when most new students enter law school with significant computer and Internet familiarity,<sup>9</sup> and the practicing bar increasingly relies on the Internet,<sup>10</sup> law schools are only now awakening to the Internet's potential.

Legal educators' somewhat grudging acceptance of the Internet continues a longstanding tradition of skepticism about the appropriate role for computers in legal education.<sup>11</sup> Although the capability of computers to assist in legal research and to supplement legal education was noted as early as the mid-1960s, computers remained at the periphery of law schools until well into the 1980s.<sup>12</sup> Even

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5. See generally R. Warden, *The Virtual Campus: A Breakthrough in Spain*, FIN. TIMES, Oct. 3, 1995, at 24.

6. See generally I. Trotter Hardy, *Electronic Communications and Legal Change: Electronic Conferences: The Report of an Experiment*, 6 HARV. J.L. & TECH. 213 (1993).

7. See *infra* Part II.

8. I conducted a detailed survey in January 1997 that revealed that the total number of law school course Web sites in operation was roughly 100 to 150, less than one for every law school in the United States. Michael Geist, Web Survey (Jan. 1997) (unpublished survey on file with author) [hereinafter Web Survey]. For an excellent Web resource on law faculty Web work, see *JURIST: Law Professors on the Web* (visited Nov. 1, 1997) <<http://www.law.pitt.edu/hibbitts/jurist.htm>>.

9. Nearly 95 percent of my students at the Columbia Law School in the fall of 1996 professed to be comfortable using a Web browser such as Netscape Navigator.

10. A Fall 1996 survey conducted by *The Internet Lawyer* and Microsoft Corporation found that an estimated 71 percent of legal professionals were using the Internet. See *Lawyers Pick Favorite Search Engines and Browsers*, 1 LAW. ONLINE 1, 1 (1997). For details on the Internet's potential role in continuing legal education, see Kenneth P. Mortensen, *Bridging The Gap: Internet Based Mandatory Continuing Legal Education*, in WHAT LAWYERS NEED TO KNOW ABOUT THE INTERNET, at 103 (PLI Patents, Copyrights, Trademarks & Literary Property Course Handbook Series No. 443, 1996). For details on the Internet's potential role in the legal profession generally, see Ethan Katsh, *Digital Lawyers: Orienting the Legal Profession to Cyberspace*, 55 U. PITT. L. REV. 1141 (1994).

11. See generally Thomas Allen & William Robinson, *The Future of Computer Assisted Learning in Law*, 3 J.L. & INFO. SCI. 274 (1987); Paul F. Teich, *How Effective is Computer-Assisted Instruction? An Evaluation for Legal Educators*, 41 J. LEGAL EDUC. 489 (1991).

12. See generally Teich, *supra* note 11. For similar experiences in other countries, see Robert T. Franson, *IBM-UBC Cooperative Project on Law and Computers: A Tentative Evaluation*, 23 U.B.C. L. REV. 171 (1988) (discussing the experience in Canada); R. P. Jones & J. Van Wyk, *Computers in Legal Education*, 4 Y.B.L.

computer-assisted legal instruction ("CAI"), the dominant use of computers in legal education for the past 25 years, has never achieved the promise envisioned by its proponents,<sup>13</sup> despite the admirable efforts and support of a national organization<sup>14</sup> and the availability of numerous software programs and tutorials.<sup>15</sup>

Notwithstanding legal academia's reluctance to embrace computer technology, the circumstances that have elevated the role of the Internet in most other academic disciplines<sup>16</sup> are now poised to drag legal education onto the proverbial "information superhighway." In particular, the affordability of the personal computer, the increasing availability and speed of network access, and the relative ease of Internet use and programming have created, and should continue to create, numerous opportunities for legal educators to integrate computers into their teaching and scholarship without necessitating a substantial investment of either time or money.

In this Article, I discuss these new opportunities by examining how law schools have responded to computers in the recent past and by exploring some of the ways that legal educators can now "weave the Web" into their teaching and scholarship. Even faculty members who are comfortable using only a word processor can create material for the Internet.<sup>17</sup> Accordingly, the potential for computers to play an integral role in the legal education process has never been greater.

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COMPUTERS & TECH. 1 (1989) (discussing the experience in the United Kingdom).

13. See Gary Clifford Korn, *Computer-Assisted Legal Instruction: Some Reservations*, 33 J. LEGAL EDUC. 473 (1983); see also Robert Charles Clark, *A Postscript on Gary Korn's Reservations About CAI*, 33 J. LEGAL EDUC. 489, 489 (1983) ("[A]s with any very new practice, most professors will not be inclined to engage in developing CAI until a few pioneers have both cleared a path and obtained visible rewards for doing so."); Teich, *supra* note 11.

14. The Center for Computer-Assisted Legal Instruction, today known as "CALI," headquartered in Chicago, Illinois.

15. CALI has developed software, named CALI-IOLIS, designed to facilitate the creation of CAI tutorials. In April 1997, CALI added Webolis, an Internet-based library of CAI exercises with tools for creating custom lessons. The 1997-98 CALI catalog lists over 100 exercises covering 25 legal topics. See Center for Computer-Assisted Legal Instruction, *CALI* (visited Nov. 1, 1997) <<http://www.cali.org/>>.

16. According to a 1996 survey conducted by CCA Consulting Inc., nearly all higher education disciplines showed a rise in technology integration in the curriculum from the previous year. Leading the way were computer science (85 percent), engineering (70 percent), and business administration (52 percent). See *Technology Integration into the Curriculum*, SYLLABUS, Mar. 1997, at 10.

17. Although this statement may not have been true in late 1995, the software market is currently loaded with Hypertext Markup Language ("HTML") editors that enable the user to create Web pages without having any prior coding knowledge or experience.

In Part I, I trace the role of the computer, particularly CAI, in legal education. In my judgment, the failure of CAI to develop a critical niche in legal education is attributable primarily to several shortcomings of the early endeavors of the 1960s, 1970s, and 1980s. Since the development of the Internet has corrected most of these shortcomings, computer-based learning warrants a reexamination by previously skeptical legal educators.

In Part II, I examine how legal educators can use the Web to enrich legal education. To that end, I categorize the possibilities into three groups: 1) using the Web as a new way to deliver traditional or old information, such as syllabi or assignments, previously provided to students solely in paper form; 2) using the Web to deliver new information such as class announcements or links to other relevant Web sites; and 3) using the Web to create new teaching tools such as virtual simulations and Web lectures.

In Part III, I summarize the evolution of computers in legal education and highlight both the opportunities and the potential pitfalls that the Internet's development presents.

In examining the Web's legal education potential, I draw heavily from my own experience in designing and maintaining a Web site for my Legal Research and Writing course at the Columbia Law School.<sup>18</sup> Created in the summer of 1996, the site was made available to sixty first-year students at the Columbia Law School, whom I strongly encouraged, though did not require, to use the online component of the course. Throughout the semester, I solicited regular feedback from my students and, in the process, was able to incorporate many of the features discussed herein. The results proved highly successful as seventy-five percent of the students indicated that the course Web site was either very useful or somewhat useful and sixty-one percent of the students indicated that, having taken a course with a Web site, they would be more likely to take a future course that offered a Web site than one that did not.<sup>19</sup>

Following the suggestions advocated in this Article, I have posted a copy of it on the Web.<sup>20</sup> Although some readers may be reluctant to

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18. Michael Geist, *Legal Research and Writing Resource Home Page* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/lrw.html>>.

19. See Course Evaluation, *supra* note 1.

20. Michael Geist, *Where Can You Go Today?: The Computerization of Legal Education from Workbooks to the Web* (visited Dec. 4, 1997) <<http://jolt.law.harvard.edu/articles/11hjolt141.html>>.

read scholarship from a computer screen,<sup>21</sup> I believe that the advantages of hypertext, which enables the reader to view and further explore the actual Web sites discussed, outweigh the disadvantages presented by this form of publication.<sup>22</sup>

### I. THE EARLY COMPUTERIZATION OF LEGAL EDUCATION: CALR, CAI, AND ELECTRONIC CASEBOOKS

The use of computers as part of legal practice and education has a relatively short history beginning in the mid-1960s. At that time, the suggestion that computers could play a critical role in either legal research or in legal education would have seemed absurd to most. Law had a longstanding history of case law organized in various indices, with books being both the start and end point for lawyers and law students. Notwithstanding this precedent, several pioneers appreciated the computer's potential and began to work at finding ways to utilize its power in the legal arena.

Although the two major computer-related legal ventures began at roughly the same time, their respective impact has thus far been significantly different. The more successful venture, computer-assisted legal research ("CALR"), today has spawned two major legal online services, LEXIS and Westlaw, and is seen as an indispensable part of lawyering and legal education.<sup>23</sup> The less successful venture, CAI, has thus far played a relatively minor role in legal education despite the fact that it has been the focus of considerable energy from many legal educators and institutions.<sup>24</sup> In the remainder of Part I, I will describe the development of each of these respective ventures as well as touch on a third, more recent computer-related venture, electronic casebooks.

With the number of cases and statutes mushrooming at an alarming rate, lawyers in the 1960s recognized the problems inherent in the

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21. For details on the problems associated with reading from a computer screen, see Bernard J. Hibbitts, *Last Writes? Re-assessing the Law Review in the Age of Cyberspace*, 71 N.Y.U. L. REV. 615, 676-77 (1996).

22. In fact, one area of significant Internet incursion into the law school has been the growth of online versions of law reviews. As of February 1997, over 100 law journals had Web sites, with many providing full text searching capabilities for all articles. In fact, several journals, including the *Journal of Online Law*, are available only in electronic format.

23. For a historical examination of CALR, see William G. Harrington, *A Brief History of Computer-Assisted Legal Research*, 77 L. LIBR. J. 543 (1985).

24. For a historical introduction to CAI, see Roger Park & Russell Burris, *Computer-Aided Instruction in Law: Theories, Techniques, and Trepidations*, 1978 AM. B. FOUND. RES. J. 1.

traditional, laborious method of legal research.<sup>25</sup> Professor John Horty, the Director of the University of Pittsburgh Health Law Center, was the first to successfully use computers to alleviate this growing problem. Using card-punch machines, Professor Horty first coded all Pennsylvania public health laws onto punch cards and then transferred the information to computer tape, enabling users to search the statutes by keyword.<sup>26</sup> Professor Horty, who first demonstrated his system at the American Bar Association's Annual Meeting in 1960,<sup>27</sup> expanded the breadth of his database throughout the decade, adding the public health statutes from all fifty states as well as some U.S. Supreme Court and Pennsylvania court decisions.<sup>28</sup> Professor Horty endeavored to prove the utility of his CALR project by conducting searches on behalf of outside lawyers. The search requests were typically communicated by either telephone or mail and Professor Horty furnished a response the following day.<sup>29</sup>

Professor Horty was also indirectly instrumental in bringing the other major concurrent CALR project to fruition. Coinciding with the activities in Pittsburgh, the Ohio State Bar Association considered establishing a CALR service for Ohio lawyers. Following an appearance by Professor Horty in 1965 at the Bar Association's annual dinner, the president of the Bar Association, James F. Preston, Jr., decided to take the necessary steps to make the CALR service a reality. Soon after, the Bar Association appointed William Harrington as research counsel. Harrington held a series of meetings with Professor Horty in order to gauge the relative merits of the available hardware and software.<sup>30</sup>

In the year that followed, the Ohio project, which was later named Ohio Bar Automated Research ("OBAR"), began to take shape. The most critical aspect of the project came early, with a definition of the CALR service's goal. According to Harrington:

This definition was the most important achievement of the Ohio project's first year — perhaps of the project's entire five years. The definition written by the Ohio group more than eighteen years ago is the basic definition of LEXIS and Westlaw to this day. In a few words, the Ohio group defined what it wanted as a

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25. See Harrington, *supra* note 23, at 544.

26. See Hibbits, *supra* note 21, at 656.

27. See *id.*

28. See Harrington, *supra* note 23, at 544.

29. See *id.*

30. See *id.* at 545.

nonindexed, full-text, on-line, interactive, computer-assisted legal research service.<sup>31</sup>

Interestingly, this goal of "a nonindexed, full-text, on-line, interactive, computer-assisted legal research service," although taken for granted today, met with considerable opposition at the time, particularly from legal academia. For example, many law librarians expressed concern that the nonindexed nature of the service would bypass the well-established index and digest system, confusing researchers.<sup>32</sup> Furthermore, some viewed the use of full-text searching as a serious mistake since, given the perceived difficulty of searching full-text, it was believed to be a prohibitively expensive use of computer resources.<sup>33</sup>

With a definition nevertheless agreed upon, Harrington set out to find the appropriate hardware and software for the project. In January 1967, Harrington traveled to Dayton to view a nonindexed, full-text, on-line, interactive system developed by Data Corporation for the Air Force. The system was precisely what OBAR had envisioned. Soon after, OBAR and Data Corporation entered into a commercial agreement. Under the terms of this agreement, Data Corporation agreed to modify its software to better suit legal research and to convert a body of Ohio case law and statutes into electronic form.<sup>34</sup> Limited at first to Ohio materials, the service quickly expanded as interest spread nationwide.

By today's standards, the service's searching speed was positively glacial, though this did not seem to disturb prospective users. For example, Harrington describes a demonstration search during an ABA convention that ran over four hours, but which the lawyers present still regarded as extremely efficient.<sup>35</sup>

In 1969, the Mead Corporation purchased Data Corporation and, after several years of committing significant financial resources to the CALR project, spun it off into a subsidiary named Mead Data Central.<sup>36</sup> In 1972, the service was renamed LEXIS and its growth continues to this day.<sup>37</sup>

The West Publishing Company, meanwhile, did not decide to enter into the CALR market until 1973. After two years of development,

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31. *Id.*

32. *See id.* at 546.

33. *See id.*

34. *See id.* at 547-48.

35. *See id.* at 551.

36. *See id.* at 550.

37. *See id.* at 552.



Westlaw went online in April 1975 with West's headnotes available for computerized searching. A year later, Westlaw followed the LEXIS lead and became a full-text database.<sup>38</sup> Although initially plagued by software problems, the system was gradually improved.

From a legal education perspective, the single most important improvement in LEXIS and Westlaw took place in 1990, when both systems offered a free password to every law student in the United States.<sup>39</sup> Before this significant event, most law schools possessed only a few access points to the computerized services.<sup>40</sup> With unlimited LEXIS and Westlaw access, students can now conduct comprehensive legal research unrestricted by past limitations such as inadequate library resources or prohibitive costs. Both LEXIS and Westlaw, despite some limitations in the breadth of their databases, such as a shortage of some international and comparative law materials (at least when compared to domestic materials) and incomplete law journal coverage, now serve vital roles as the sources for most CALR in law firms and law schools.

The growth and development of CALR is truly remarkable both with regard to its impact on the legal profession and on law school teaching methods. CALR has become an indispensable tool of lawyering and law study because it enables users to access huge amounts of information quickly and easily. Moreover, it has allowed smaller firms and schools to enjoy the advantages that previously were possible only by owning large, expensive law libraries. In the process, CALR has provided ample evidence of the power of computers in conducting legal research.

CAI has thus far not enjoyed a similarly impressive fate. The origins of CAI can be found in programmed exercises printed in workbooks and developed during the 1960s by several professors, notably Professor Charles D. Kelso of the Indiana University School of Law.<sup>41</sup> Covering such diverse topics as the rule against perpetuities and creditors' remedies, these exercises enabled students to conduct individual tutorials by responding to various questions. The program required students to enter the correct response before proceeding to the next question, leading them through the particular legal issue in a step-by-step manner while simultaneously creating an active learning experience.<sup>42</sup> Professor Robert Keeton of the Harvard Law School

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38. See *id.* at 553-54.

39. See Ronald W. Staudt, *An Essay on Electronic Casebooks: My Pursuit of the Paperless Chase*, 68 CHI.-KENT L. REV. 291, 294 (1992).

40. See *id.*

41. See Park & Burris, *supra* note 24, at 3.

42. See *id.* at 3-4.

developed a variation on this approach that allowed students to branch out to different parts of the workbook depending upon a particular response.<sup>43</sup> The Keeton approach was effectively a paper hypertext system whereby students could link to various pages in the workbook without uniformly following a pre-determined path.

Although CAI demonstrations were given as early as 1965 and 1966 at the American Association of Law Schools ("AALS") conventions,<sup>44</sup> actual use of CAI exercises did not begin until the early 1970s at the University of Illinois College of Law.<sup>45</sup> Using the PLATO IV computer-assisted method of teaching law, the Illinois system taught future interests and contract law.<sup>46</sup> The system significantly improved upon the workbook exercises by providing a rapid and automatic response to student answers and permitting students to enter full English words, referred to as free language technique, rather than merely yes or no answers. Establishing a free language technique was not easy, however. The programmer was required to anticipate the full range of responses that students might give to a particular question and to enter such words into the computer's "vocabulary."<sup>47</sup> Although the Illinois system's creators expressed uncertainty with regard to the exercises' effectiveness, students using the system were nearly unanimous in their approval. In one survey, nearly ninety percent indicated that they felt they could learn the material exclusively from the computer without the need for classroom instruction.<sup>48</sup>

Meanwhile, the University of Minnesota Law School also experimented with CAI when Professor Keeton visited the school in 1971. With the assistance of Russell Burris, Professor Keeton developed a torts exercise that also employed a free language technique.<sup>49</sup> In 1973, Professor Roger Park joined the Minnesota faculty and proceeded to develop exercises on civil procedure and professional responsibility, followed by nearly a dozen other exercises over the course of the decade.<sup>50</sup>

The tie between Minnesota and Harvard continued throughout the 1970s, and in 1982 the two schools joined forces to establish the Center

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43. See *id.* at 5.

44. See *id.* at 10 n.19.

45. See Peter B. Maggs & Thomas D. Morgan, *Computer-Based Legal Education at the University of Illinois: A Report of Two Years' Experience*, 27 J. LEG. EDUC. 138, 142-44 (1975).

46. See *id.* at 142.

47. See *id.* at 140-41.

48. See *id.* at 152.

49. See Park & Burris, *supra* note 24, at 10.

50. See *id.* at 11.

for Computer-Assisted Legal Instruction ("CCALI").<sup>51</sup> Now known simply as CALI, the organization has grown to 170 member schools, the majority of which are located in the United States with international affiliates in Canada and Italy.<sup>52</sup> Currently boasting a catalog of over 100 CAI exercises in twenty-five legal subject areas using either Windows, DOS, or Macintosh operating systems, CALI has succeeded in becoming the international focal point for CAI.<sup>53</sup> Moreover, CALI has developed CALI-Iolis, a software program designed to facilitate the creation of CAI exercises without the need for coding expertise, and has recently made a Web version, Webolis, available to the legal education community.<sup>54</sup>

CALI offers four types of exercises. First, there are memory drills, which are short questions requiring a yes or no answer. Second, there are tutorials, which present a greater degree of information and allow students to branch off in different directions. Third, there are simulations, which attempt to recreate real life situations and require that students assume a certain role within the situation. Fourth, there are games, which are similar to simulations but involve a competitive element with several students participating at the same time.<sup>55</sup> All four types of exercises can be used as supplements to material not covered in class or as a review of previously taught material.<sup>56</sup>

Interest in CAI has spread internationally. For example, British and Irish law schools have joined forces to establish the British and Irish Legal Educational Technology Association ("BILETA"), an organization with 45 member schools devoted to the development of CAI.<sup>57</sup> In Canada, the Law Society of Upper Canada, the Province of Ontario's bar association, implemented a CAI income tax law course in the mid-1980s.<sup>58</sup> With some modifications, incoming bar admission students still use the CAI course as a means of reviewing background material before participating in the bar admission taxation classes.<sup>59</sup>

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51. See Russell Burris, *Critical Features of Microcomputer-Based Exercises for Effective Teaching and Learning of Law*, 3 Y.B.L. COMPUTERS & TECH. 36, 37 (1987).

52. See Center for Computer-Assisted Legal Instruction, *supra* note 15.

53. See *id.*

54. See *id.*

55. See Linda Rio, *Computer-Assisted Legal Instruction*, 12 LEGAL STUD. F. 323, 323-24 (1988).

56. See *id.* at 326.

57. See Allen & Robinson, *supra* note 11, at 277.

58. See Martin Felsky, *The Canadian Experience in Teaching Computers and Law*, 3 Y.B.L. COMPUTERS & TECH. 97, 100 (1987).

59. See *id.*

A CAI project undertaken at the University of Tasmania in Australia in the early 1990s is particularly noteworthy.<sup>60</sup> Despite its small faculty (25 teachers) and even smaller budget, the school created CAI exercises using the HyperCard player that was included with Apple Macintosh computers.<sup>61</sup> The use of HyperCard is significant because it was an early implementation of the hypertext approach now used in the WWW. Students using the exercises were able to actively navigate between questions, background information, and other pre-programmed assistance. Although the exercises did not link to outside networks, they may well have been the first "Web-like" computer exercises developed for law students.

The work of CALI, BILETA, and others clearly demonstrates that CAI has some significant benefits. First, in virtually every study of CAI usage in law schools, students have indicated that they enjoyed learning via the computer.<sup>62</sup> This result is hardly surprising since CAI enables students to study at their own pace and in an individualized manner, without the pressures inherent in a large classroom setting. Furthermore, CAI enhances student self-confidence since it allows students to feel less inhibited in answering questions, safe in the knowledge that their responses are private.<sup>63</sup> Second, CAI exercises save students' time when compared with traditional teaching methods.<sup>64</sup> As one study on the topic noted:

Time is considered to be a valuable resource within a student's course of legal instruction. With CAI, not only can students progress at their own pace, but it seems that in such situations students will actually acquire the necessary knowledge in less time than lecture methods require. The saving in time can be

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60. See Peter Jones & Rick Snell, *Trials and Tribulations of Developing Computer Assisted Learning in a Small Law School*, 5 J.L. & INFO. SCI. 57 (1994).

61. See *id.* at 58-59.

62. See Russell Burris, *Network Experience and Experiments*, in *TEACHING LAW WITH COMPUTERS: A COLLECTION OF ESSAYS* 65, 80-84 (Russell Burris et al. eds., 1979) (describing study of student experiences at seven schools where 73.8 percent of students believed that the CAI exercises created a good atmosphere for learning and 87.8 percent of students believed that the exercises should be offered again); see also Margaret M. Hazen & Thomas Lee Hazen, *Simulation of Legal Analysis and Instruction on the Computer*, 59 IND. L.J. 195, 210 (1984); Ronald W. Staudt, *Computers at the Core of Legal Education: Experiments at IIT Chicago-Kent College of Law*, 35 J. LEGAL EDUC. 514, 524-25 (1985).

63. See Max Young, *Computer Assisted Contract Law Tutorials*, 2 Y.B.L. COMPUTERS & TECH. 131, 133 (1986).

64. See Hazen & Hazen, *supra* note 62, at 210.

seen due to time spent learning as opposed to time spent waiting to ask a question, or time spent reviewing already learned material in the group setting of a lecture classroom.<sup>65</sup>

Several other studies echo these findings,<sup>66</sup> with some reports indicating that, with CAI, students learn material in about one-third less time than with conventional instruction.<sup>67</sup>

The manner in which CAI exercises have developed is chiefly responsible for these results. Specifically, CAI is often an active learning process requiring students to enter responses and engage in a "Socratic" dialogue with the computer.<sup>68</sup> This approach differs from the traditional setting where, notwithstanding the best efforts of faculty, students spend the majority of their time listening to lectures or to the responses and comments of their classmates. Furthermore, students can repeat CAI exercises,<sup>69</sup> thereby increasing the likelihood of their retaining the material. Finally, the step-by-step approach of most CAI exercises ensures that students advance progressively through the material and fully understand each block of material before advancing to the next block.<sup>70</sup>

The professor can also structure CAI exercises to allow for immediate feedback on how students are coping with the material. For example, the professor can configure the exercise to record the correct response rate to certain questions or create open-ended questions and have the students' responses relayed directly to the professor on an anonymous basis. Under either scenario, the professor can gauge the level of the class's understanding and adjust subsequent lectures accordingly.<sup>71</sup>

Finally, CAI exercises increase student interest and excitement in both the subject matter and in the use of computers and technology. As indicated above, students consistently voice their approval of com-

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65. *Id.*

66. See Teich, *supra* note 11, at 494.

67. See *id.*

68. For further information on the importance of active learning in the law school setting, see Steven I. Friedland, *How We Teach: A Survey of Teaching Techniques in American Law Schools*, 20 SEATTLE U. L. REV. 1 (1996); Michael L. Richmond, *Teaching Law to Passive Learners: The Contemporary Dilemma of Legal Education*, 26 CUMB. L. REV. 943 (1995-1996).

69. See Rio, *supra* note 55, at 328.

70. See *id.*

71. See *id.* at 331.

puter-based learning after having experienced CAI.<sup>72</sup> At the institutional level, students have cited the focus on computers at IIT Chicago-Kent College of Law as a major impetus for their decision to attend the school.<sup>73</sup> Furthermore, in view of the increased computerization of the legal profession, students experiencing CAI are undoubtedly more comfortable with use of computers and better prepared to begin their careers.<sup>74</sup>

Notwithstanding these significant advantages, CAI has not managed to break into mainstream legal education. Although the efforts of CALI are impressive, the current reality is that many legal educators do not use CAI.<sup>75</sup> Several reasons lie behind this disappointing CAI usage.

Perhaps the biggest single barrier to CAI's acceptance in legal education is the central, yet obvious, fact that legal educators were trained in law rather than computers. Although some professors may be familiar with computers, most experienced law school without the benefit of computers themselves and functioned for much of their professional careers without the use of a computer. Accordingly, most professors simply lack (or at least perceive themselves to lack) the expertise necessary to create effective CAI exercises, regardless of the ease of programming software. As Gary Korn notes in his article critical of CAI, law professors think and write in English, not in BASIC, PASCAL, APL, or any other computer language.<sup>76</sup>

The lack of computer expertise was particularly troublesome during CAI's initial years of development. For example, the exercises created in the early 1970s at the University of Minnesota required the support of learning researchers, instructional designers, evaluators, and computer programmers, in addition to the active participation of the professor.<sup>77</sup> Although the development of software programs has eased the creation of CAI exercises, many legal educators have continuing technical concerns.<sup>78</sup>

Even if legal educators overcome these concerns, the time investment necessary to create effective CAI exercises may deter many educators from becoming involved in such projects. For example, one report in the 1980s suggested that the creation of a one hour CAI

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72. See Burris, *supra* note 62, at 80-84.

73. See Rio, *supra* note 55, at 338.

74. See Franson, *supra* note 12, at 195.

75. See Allen & Robinson, *supra* note 11, at 274.

76. See Korn, *supra* note 13, at 477.

77. See Russell Burris, *The Authoring Process and Instructional Design*, in *TEACHING LAW WITH COMPUTERS: A COLLECTION OF ESSAYS*, *supra* note 62, at 43, 49.

78. See Rio, *supra* note 55, at 333.

exercise required as many as 500 hours of work,<sup>79</sup> while another author of seven contract law tutorials reported that the entire project took 2,000 hours to write.<sup>80</sup> Further, for a faculty member without tenure, developing CAI exercises may simply be too risky given the uncertainty of a reward that is commensurate with that for traditional scholarship.<sup>81</sup>

For those legal educators willing to brave the risks noted above, the cost of equipment has also proven to be an almost insurmountable barrier at some institutions. Until very recently, the costs associated with CAI, including the acquisition of hardware, the development of software, and the provision of training, were extremely problematic. In the 1970s, merely transferring a single exercise from one institution to another required an outlay of up to \$3,000 if the computer models differed.<sup>82</sup> In the 1980s, projects to increase computer facilities and usage at IIT Chicago-Kent College of Law and the University of British Columbia Law School encountered difficulties not only with the lack of computer familiarity by both faculty and students,<sup>83</sup> but also with the prohibitive costs of such projects.<sup>84</sup> The significance of cost issues is borne out by the fact that a consistent student criticism with regard to CAI exercises has been directed at the lack of computer terminal availability.<sup>85</sup>

Assuming educators can overcome the cost issue, several other barriers remain. The difficulty of converting a CAI exercise from one operating system to another is problematic.<sup>86</sup> Although the popularity of the DOS and Windows operating systems mitigates this concern somewhat, there is still something less than absolute uniformity, as numerous CAI exercises are regularly created for the Apple Macintosh operating system.<sup>87</sup>

Finally, leaving aside technical, time, and cost considerations, many professors remain skeptical about the actual effectiveness of CAI. Proving the effectiveness of CAI is inherently difficult, hampered by the methodological limitations in evaluating the return on the cost, time, and benefit of such programs, particularly given the difficulty of employing

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79. See *id.*

80. See Young, *supra* note 63, at 134.

81. See Clark, *supra* note 13, at 489.

82. See Carolyn P. Landis, *The EDUCOM Workshop: A Model*, in TEACHING LAW WITH COMPUTERS: A COLLECTION OF ESSAYS, *supra* note 62, at 53, 61.

83. See Staudt, *supra* note 62, at 514.

84. See Franson, *supra* note 12, at 171.

85. See Hazen & Hazen, *supra* note 62, at 214; Teich, *supra* note 11, at 498.

86. See Harry G. Henn & Robert C. Platt, *Computer-Assisted Law Instruction: Clinical Education's Bionic Sibling*, 28 J. LEGAL EDUC. 423, 427 (1977).

87. See Jones & Snell, *supra* note 60, at 58-59.

control groups of equal quality.<sup>88</sup> Furthermore, student performance may marginally improve when students receive the additional resource of CAI exercises, but it is difficult to determine whether extending class or office hours or suggesting extra study would achieve similar gains.<sup>89</sup>

Additionally, professors may regard CAI as suitable primarily or exclusively for black-letter law issues.<sup>90</sup> With this perspective, educators may view CAI as inconsequential with regard to the oft-stated goal of teaching students to think like lawyers. Moreover, the linear structure of most CAI exercises, which involve a gradual progression from issue to issue, may encourage students to simply regurgitate the author's view on a particular topic rather than enable them to develop their own thinking.<sup>91</sup> Therefore, although CAI exercises may well assist students to learn basic legal principles, educators may sometimes view these exercises as working against the larger goals of legal education.

A historical discussion of computers in legal education would not be complete without noting a third computer venture that burst onto the scene in the early 1990s. The development of electronic casebooks, whose impact is still yet to be determined, may herald another important use of computers in the legal education process.<sup>92</sup> It is noteworthy that the technology that has made electronic casebooks viable, such as affordable personal computers, advanced CD-ROM technology, and hypertext, has been instrumental in the rapid growth of the Internet.<sup>93</sup> Accordingly, the ultimate impact of electronic casebooks may only become clear once the Internet's role in legal education becomes better defined.

Electronic casebooks, which contain all the materials of a traditional casebook on a single CD-ROM, provide students with several advantages over traditional casebooks,<sup>94</sup> as effectively summarized by Matasar and Shields:

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88. See Allen & Robinson, *supra* note 11, at 277; Teich, *supra* note 11, at 489.

89. See Teich, *supra* note 11, at 495.

90. See Allen & Robinson, *supra* note 11, at 279.

91. See *id.* at 280.

92. See Lincoln B. Quintana, *Making Our Way into the Coming Age of Electronic Casebooks*, 8 Y.B.L. COMPUTERS & TECH. 131 (1994) (detailing an attempt to electronically publish intellectual property materials at the University of British Columbia Faculty of Law); Staudt, *supra* note 39, at 291.

93. See Staudt, *supra* note 39, at 293-96.

94. For two interesting studies on students' use of electronic materials, see Peter W. Martin, Report on the Chicago-Kent Computer Section — 1995-96 (May 1996) (unpublished manuscript on file with the author); Richard A. Matasar & Rosemary Shields, *Electronic Law Students: Repercussions on Legal Education*, 29 VAL. U.L. REV. 909 (1995).



Hypertext electronic materials and casebooks can change the way students use core legal education material. Hypertext provides more than fast access to traditional legal materials; it permits students to associate related text tangibly by linking one idea to another across an entire casebook. Students can link material within one substantive course or across multiple substantive courses. This allows students to electronically build their own conceptual models of the law across the entire curriculum . . . . More importantly, each student's model of the law can be easily updated, changed, and rearranged after each class . . . . In the end, students have the core text of the casebook and an outline of the law with their own annotations of important discussions merged into an easily accessible, reusable, and searchable format.<sup>95</sup>

The role of computers in legal education continues to evolve. From the hesitant beginnings of four hour searches and paper-based workbooks to today's universal access to LEXIS and Westlaw, and electronic casebooks, the computer's influence on legal education is both undeniable and growing. However, with due regard for the uncertainty inherent in making predictions about the course of technology, it seems safe to say that the development of the Internet, to which I now turn, will precipitate the most significant changes in the computerization of legal education.

## II. WEAVING THE WEB INTO LEGAL EDUCATION

Notwithstanding thirty years of advancements in computers and legal education, there remain significant opportunities for growth and improvement. Although CALR has become an integral part of legal research, lawyers are still limited by practical considerations such as the high cost of online research (though admittedly such considerations do not factor into the legal education equation).<sup>96</sup> CAI, despite its popular-

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95. Matasar & Shiels, *supra* note 94, at 922.

96. Since faculty and students do not pay for LEXIS and Westlaw usage, the limitations of CALR in legal education are relatively minor. From the faculty perspective, limitations in available materials, such as international legal source materials, mandate conducting both online and book research to ensure exhaustive coverage of many areas. From the student perspective, limitations often involve insufficient computer facilities.

ity with students, faces the serious disadvantages enumerated in Part I, particularly the significant investment of time, training, and money that has resulted in many professors foregoing CAI projects. Electronic casebooks show perhaps the greatest potential of the three ventures, yet some students remain wary of utilizing some of the features like electronic note-taking, thus making the impact of this technology uncertain.<sup>97</sup>

Although the Internet is currently only in the early stages of its development, it is already showing signs of overtaking CALR, CAI, and electronic casebooks by providing users with the capabilities of all three ventures in one user-friendly and powerful system. For example, the CALR potential of the Internet expands daily with the addition of case law and statutes,<sup>98</sup> numerous international law materials,<sup>99</sup> and other legal materials, such as audio versions of Supreme Court arguments,<sup>100</sup> that are either costly or unavailable from other sources. Similarly, the Internet has the potential to rejuvenate CAI by incorporating video and real life simulations, features that were difficult, if not impossible, to achieve as recently as five years ago.<sup>101</sup> Finally, the potential to use the Internet itself as an online casebook, replete with cases, statutes, hearing reports, and other materials, may enable ambitious professors to skip the electronic casebook stage entirely.

Not only does the Internet have the potential to transform CALR, CAI, and electronic casebooks, but it can do so in a manner that is user-friendly, inexpensive, and easily updateable.<sup>102</sup> Regardless of their level of technical sophistication, legal educators who incorporate an

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97. See Martin, *supra* note 94, at 5.

98. See, e.g., *FindLaw Internet Legal Resources* (visited Nov. 1, 1997) <<http://www.findlaw.com/>> (allowing full text searching of U.S. Supreme Court decisions dating back to 1937); *National Association of State Information Resource Executives* (visited Nov. 1, 1997) <<http://www.nasire.org/>>; *The U.S. House of Representatives Internet Law Library, U.S. Code* (visited Nov. 1, 1997) <<http://law.house.gov/usc.htm>>.

99. See, e.g., *La Cour Supreme du Canada* (visited Nov. 1, 1997) <<http://www.droit.umontreal.ca/CSC.html>>; *The U.S. House of Representatives Internet Law Library, Treatises and International Law* (visited Nov. 1, 1997) <<http://law.house.gov/89.htm>>; *World Wide Constitutions* (visited Nov. 1, 1997) <<http://www.eur.nl/iac/const.html>>.

100. See Oyez! Oyez! Oyez! (visited Nov. 1, 1997) <<http://oyez.at.nwu.edu/oyez.html>> [hereinafter *Oyez*].

101. See Kevin Hogan et al., *Interactive Video in Law Teaching*, 4 Y.B.L. COMPUTERS & TECH. 104, 104 (1990) (assessing the utility and challenges of video exercises).

102. Although the remainder of this Article focuses primarily on ways for professors to use the Web, other Internet applications, including e-mail, file transfers, and discussion groups, can also be helpful tools in the education process.

online component into their courses will find that the conversion of material to the Web often requires no more than a couple of mouse clicks.<sup>103</sup>

The creation of a course Web site is also not limited to a particular group of course topics or fields. At present, law course Web sites cover such diverse fields as mergers and acquisitions,<sup>104</sup> feminist philosophy,<sup>105</sup> evidence,<sup>106</sup> torts,<sup>107</sup> professional responsibility,<sup>108</sup> constitutional law,<sup>109</sup> legal research and writing,<sup>110</sup> and many more. In fact, I have located course Web sites that cover over fifty different course topics.<sup>111</sup> Furthermore, course Web sites are effective for both large lecture-style classes and for smaller seminars, albeit with some variation in content.

Notwithstanding the Internet's tremendous potential, as with any new technology, growing pains are inevitable.<sup>112</sup> Those considering developing a Web component to their courses should bear in mind that several shortcomings presently constrain the effectiveness of the Web as a legal education tool. These shortcomings are divided into three groups: the absence of a law school Web culture; time constraints; and technology limitations.

The development of a Web culture — that is, an acceptance of the Web as an integral and useful part of the legal education process — is

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103. There are many software programs that enable users to convert electronic documents, such as documents created with a word processor, into HTML format. Once a document has been converted to HTML, a professor need only transfer the document from his or her own computer to a Web server in order to make that document accessible to anyone using the World Wide Web.

104. See, e.g., Robert M. Lawless, *Mergers & Acquisitions* (visited Nov. 1, 1997) <<http://www.law.missouri.edu/lawless/m&a/>>.

105. See, e.g., Kim Dayton, *Research Workshop: Feminist Theory, Law, and Philosophy* (visited Nov. 1, 1997) <<http://lark.cc.ukans.edu/~akdclass/femlit/femphsylv.html>>.

106. See, e.g., Archie Zariski, *L252 Evidence and the Litigation Process* (visited Nov. 1, 1997) <<http://carmen.murdoch.edu.au/~zariski/elp/elphone.html>>.

107. See, e.g., Jim Rossi, *Torts* (visited Nov. 1, 1997) <<http://www.law.fsu.edu/faculty/jrossi/97torts/>>.

108. See, e.g., Clifford J. Calhoun, *Professional Responsibility: Course Syllabus* (visited Nov. 1, 1997) <<http://spot.Colorado.EDU/~calhoun/ProfRespHtml/prasfa97.htm>>.

109. See, e.g., Bruce Ryder, *Constitutional Law* (visited Nov. 1, 1997) <<http://www.yorku.ca/faculty/academic/bryder/>>.

110. See, e.g., Geist, *supra* note 18.

111. See Web Survey, *supra* note 8.

112. Michael Dertouzos, the director of MIT's Laboratory for Computer Science, notes that it took more than 200 years to move from the steam engine to the jet engine. By that standard, according to Dertouzos, the Web is roughly one-fifth of the way toward an "information revolution." Spencer Reiss, *What Will Be*, WIRED, Apr. 1997, at 131.

still at least several years from fruition. This presents a chicken and egg dilemma. The effectiveness of Web course materials depends to a significant extent on their regular consultation and use by students. Where students fail to regularly consult a course Web page, the impact of materials such as class announcements and Web-based discussion groups is lessened considerably. Meanwhile, if students are reluctant or unable to make regular use of a course Web site, faculty will naturally be slow to develop such materials.

The development of e-mail as a ubiquitous form of communication in many law schools is instructive. Today, students and faculty alike regularly employ the speed and convenience that e-mail provides. Lines of students accessing their e-mail accounts is a common sight at many law schools as e-mail has become a favored means of communication. The widespread use of e-mail within the law school community is a relatively recent development, however. Its growth is attributable, in large measure, to the fact that it has achieved a critical mass. With the majority of the typical law school community using e-mail to communicate, all members of the community must consult their e-mail boxes frequently to ensure that they receive their messages.

Using the Web to provide course materials, to communicate with students, and to enhance teaching also has the potential to become a fundamental aspect of the law school experience. For this to occur, however, a Web culture must be nurtured and developed. This requires developing a critical mass on the Web by integrating Web components into the majority of law school courses. Once a Web culture is ingrained within the law school, the effectiveness and utility of many course Web site materials will increase appreciably. Today, however, most faculty and students are not as comfortable with the Web as with e-mail.

The efforts of faculty members alone cannot lead to the successful development of a Web culture. In particular, law school institutions must increase their involvement in Web-based learning. Although most law schools have by now established a school Web site, most use it primarily as a vehicle to attract prospective students. The role of the law school Web site should not end once students arrive on campus; rather, its importance should increase.

With few exceptions, law schools have not contributed to the development of Web materials for students.<sup>113</sup> Accordingly, the creation of a Web culture has thus far been the domain of a collection of small, faculty-based projects. For the Web to achieve a status similar to that of

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113. Although schools such as Cornell and Stanford have been actively producing legal materials and indices for Web-based legal research, few schools have taken steps toward developing a "virtual law school" with courses, materials, and classrooms.

e-mail, projects must be developed from the top down rather than solely from the bottom up. For instance, law schools should consider how they might better facilitate course discussion groups, long distance learning projects, and universal Web access. The importance of law school institutions in the development of a Web culture cannot be overstated. Widespread e-mail usage occurs largely due to the establishment of a campus e-mail network. Similarly, a campus Web network will be necessary for the Web to achieve an equivalent status.

Time constraints, which impact both faculty and students, are another shortcoming to consider as part of course Web site development. Although the Internet may hold some interest, a course Web site has the potential to develop into yet another claim on a student's time. In such instances, the reception accorded to a course Web site may not be as enthusiastic as might otherwise be anticipated.

Furthermore, a negative experience on the Internet may well deter students from engaging in repeat visits. The Web's growing pains are most evident in this regard. Exploring the Web without the benefit of a high speed connection can be painfully slow as graphic-heavy Web pages slowly download. Although those accessing the Web from within the school will often benefit from a fast network connection, those accessing materials from remote locations may be inclined to think that "WWW" stands for "World Wide Wait."

The ever changing nature of the Web may also result in wasted time and heightened frustration. Many Web sites are notoriously unreliable, with previously available information suddenly disappearing from a Web site, sites becoming inactive without notice, and Web servers going down with regularity. From the law student's perspective, time wasted on the Internet is particularly inefficient given the availability of alternatives such LEXIS and Westlaw.

Even with high speed network connectivity and reliable Web sites, finding material on the Web can be extremely time consuming. In many respects, one of the Web's greatest advantages — the power for anyone with Web access to make their own contribution — is also its biggest disadvantage, since the sheer volume of material available online often results in information overload. As the bulk of this information is unedited, users must invest significant time separating the wheat from the chaff. From the law student's perspective, this too may be an inefficient use of time since the commercial services provide legal materials that are easier to access and manipulate.

Many of these time concerns manifest themselves for the faculty member as well. For instance, exercises that incorporate materials located on the Web require regular updating to ensure that the materials remain available. Moreover, the creation of Web-based materials that

challenge students and overcome the limitations posed by the Web is also time consuming. Although I have suggested that software advances have made this process relatively easy, as with any new technology an initial learning curve is involved. Accordingly, professors searching for ways to save time may find that the development of a course Web site has the opposite effect.

A commitment to Web site development also poses many of the same professional risks enumerated with regard to CAI creation. Since the Web is uncharted territory, faculty members may be unwilling to reward Web work in the same manner as traditional scholarship. Accordingly, for the professor seeking tenure, the time devoted to the creation of Web materials could be better spent writing and attending to other responsibilities.

The third group of Web shortcomings are technological in nature. Notwithstanding the dizzying pace of Web innovation, from the legal educator's perspective there remains room for improvement. For instance, the lack of control over materials, particularly the inability to direct a user to a particular portion of a Web document, is a glaring example of how the Web is presently unable to match course materials on CD-ROM or the commercial services.

Several of the technological limitations are variations on problems encountered in the 1970s and 1980s. For example, the physical infrastructure of many law schools is in need of upgrading. In contrast with the 1970s and 1980s, when computer availability was a major limitation, personal computers are now affordable enough for ownership to be common among law students. In fact, a growing number of law schools now require incoming students to purchase laptop computers.<sup>114</sup> Today, however, many law schools are ill-equipped to accommodate the growing demands for network connectivity that often accompany personal computer usage.<sup>115</sup> Furthermore, limited classroom projection

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114. As of March 1997, at least 12 U.S. law schools required or planned to require incoming students to have laptop computers. See e-mail message from Professor Stephen Sowle, Chicago-Kent College of Law, to e-teach listserv (Mar. 24, 1997) (on file with author).

115. In response to network connectivity issues, several law schools have recently made concerted efforts to upgrade their facilities. For example, the University of California-Berkeley, Boalt Hall School of Law spent \$16.7 million upgrading its facilities, which included providing Internet access to every office and classroom. See *UC Berkeley Reports Booming Interest in Technology Courses for Law Students*, SYLLABUS, Mar. 1997, at 10 [hereinafter *Berkeley*]. Similarly, the Columbia Law School recently announced plans to activate nearly 500 network jacks located in student lounges and several classrooms. See e-mail message from Heather Collins, Columbia Law School, to Columbia Law School community (Feb. 17, 1997) (on file with author).

equipment and network connections make using the Internet in class a practical impossibility in many instances.

Ironically, the speed of technological changes may itself be problematic. Although most faculty and students have developed a reasonable comfort level with computer usage, the Web changes too rapidly for anyone to feel entirely comfortable. Therefore, although the Web has eliminated earlier problems such as computer compatibility and ease of use, it has also resulted in a series of new problems such as security concerns and Web browser incompatibility. Because of these problems, prospective users may be wary of getting involved and choose to wait out the Internet's growing pains.

Admittedly, the Internet's shortcomings provide legal educators with ample reason for skepticism. Notwithstanding the tremendous potential of the Internet, many may be left wondering if it isn't better to hop on the information superhighway a little further down the road. In my judgment, however, there are two main reasons why the Web stands poised to transform the role of computers in legal education today.

First, the shortcomings enumerated above are all easily surmountable. Based on the quite rapid integration of e-mail and CALR into legal education, there is every reason to expect the Web to similarly enmesh itself into the fabric of the law school experience. Time and technology concerns are intertwined in many respects — the expected improvements in Web technology, including faster modems and greater network connectivity within the law schools, the power to manipulate information located at other Web sites and to automatically update dormant Web sites, will make using the Web a more pleasant and productive experience.

Second, the accomplishments of numerous legal educators over the past several years evince the power of the Internet today. The possible uses of the Web in legal education, discussed in more detail below, are not projections of what professors might be able to do; rather, they demonstrate what is currently being done. Accordingly, there are already many professors and students experiencing and exploring the potential of the Internet. Their experience speaks far louder than doubts of the skeptics.

In the remainder of this part of the Article, I canvass many of the possible uses of the Web in legal education. For convenience, these uses are categorized into three types of uses. The first type of use, using the Web as a new way to deliver traditional information, is the easiest to achieve, since the material involved is often already available in electronic format and requires only that it be converted to HTML. The second type of use, using the Web as a way to deliver new information, is also relatively easy to achieve since much of the material involved is

available in non-electronic formats and requires only the additional step of electronic conversion. The third type of use, using the Web as a new teaching tool, is the most exciting use of the Internet; yet it is also the most challenging. Although some of the suggestions and examples are not difficult to implement, in many instances they require a fundamental rethinking about long established legal teaching methodology.

#### A. A New Way to Deliver Old Information

For professors who remain somewhat wary of committing extensive time and energy to developing a course Web site, starting with the following materials may prove to be an ideal solution. Possibilities discussed herein include the posting of online versions of a course syllabus, assignments, a course calendar, readings, model exams and answers, student evaluations, and personal schedules. In virtually every instance, the suggested materials are already readily available in electronic format and therefore require only minor tinkering in order to be suitable for the Web.

##### 1. Course Syllabus

Since providing students with a course syllabus is standard operating procedure for most courses, it is not surprising to find that it is the most common item placed on law school course Web sites.<sup>116</sup> With few exceptions, professors have clearly found an online course syllabus to be an easy and effective starting point for a course Web site. Interestingly, the sophistication of online course syllabi varies — some professors have chosen only to provide a general description of the course,<sup>117</sup> whereas others have embedded the syllabus with links to other documents.<sup>118</sup>

From the students' perspective, an online course syllabus can be helpful when contemplating course selection or when it provides additional features not found in the paper version. For example, my online course syllabus featured not only an exact replica of the paper version, but also added links to required readings, assignments, and

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116. See *Berkeley*, *supra* note 115, at 10.

117. See, e.g., Clifford J. Calhoun, *Creditors' Remedies and Debtors' Protection* (visited Nov. 1, 1997) <<http://spot.colorado.edu/~calhoun/CreditorsHtml/crcourse.htm>>.

118. See, e.g., Michael Geist, *Course Syllabus and Reading List* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/fsyll.html>>; Bernard Hibbits, *American Legal History 1600-1865* (visited Nov. 1, 1997) <[http://www.law.pitt.edu/hibbits/ah\\_16.htm](http://www.law.pitt.edu/hibbits/ah_16.htm)>.



relevant Web sites.<sup>119</sup> In my experience, the course syllabus proved to be the most visited aspect of the Web site, with some students indicating that they revisited the page on at least ten occasions during the course of the semester.<sup>120</sup>

## 2. Assignments

It can also be useful to post class assignments to a course Web site. Depending on the nature of the course, postings may include required readings for upcoming lectures, problems or issues to consider in addition to the assigned readings, or assignments requiring submission. In large classes, upcoming reading assignments are often hurriedly mentioned at the close of the lecture, leaving some students unsure about the exact assignment. Alternatively, following a seminar class, a professor may want participants to consider an issue that arose out of the discussion. In both of these instances, the online assignment page is an ideal solution. For the student, the information is clearly communicated and available twenty-four hours a day. For the professor, the page can be updated easily and quickly by simply inputting the relevant information and transferring it to a Web server.

In addition to listing the basic preparatory requirements for classes, an online assignment page may also contain assignments to be submitted to the professor.<sup>121</sup> These online assignments provide students with a backup copy if the original is misplaced and, as discussed below, may also allow for the creation of multimedia assignments incorporating such features as audio and video. The potential to incorporate the Web into class assignments also provides an excellent example of Web-based CAI, and in doing so, illustrates the ease with which CAI can be accomplished using the Internet.

For those courses in which assignments form an integral part of the evaluation format, this feature takes on a heightened importance. For example, student evaluation in my Legal Research and Writing course was based entirely on a series of written assignments. The course Web site contained online versions of all assignments, several of which featured links to relevant cases and other materials.<sup>122</sup> Moreover, the

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119. See Geist, *supra* note 118.

120. See Web Survey, *supra* note 8.

121. See, e.g., Rebecca Ward, *Business Association Assignments* (visited Nov. 1, 1997) <<http://members.aol.com/randward/busass/baassign.htm>>.

122. See Michael Geist, *Assignments* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/fassign.html>>.

assignments portion of the Web site also contained sample answers and assignment guidelines, both of which proved helpful to students.

### 3. Course Calendar

For those professors teaching several sections simultaneously, or those who frequently find themselves rescheduling classes, posting a course calendar is an effective means of informing students of scheduling changes. Informing students of rescheduled classes has traditionally been a "hit or miss" process, with notices displayed throughout the school. Assuming students are able to check the Web site regularly as part of their normal routine (as they currently can and do with e-mail), an online course calendar is likely to prove more effective than traditional methods of posting notices. For example, in my course calendar, students were able to find when and where each class was scheduled to take place, and what assignments and readings were required for each class.<sup>123</sup> Students appreciated these features, particularly during the beginning of the semester, when simply finding the correct classrooms can be difficult for new and somewhat overwhelmed 1Ls.<sup>124</sup> Moreover, a Web site calendar can also reduce the effort required of the professor by effectively transferring much of the responsibility from professor to student.

### 4. Class Readings

In addition to providing details on required readings, some professors are providing the actual readings themselves online. With the amount of material available online increasing daily,<sup>125</sup> this step is developing into a realistic alternative to costly casebooks and, as suggested above, may enable some professors to create an electronic casebook online.

Online readings can take several forms. One popular form uses links to readings located elsewhere on the Internet. Courses such as Cyberspace Law often use this approach since relevant cases and materials are readily available online.<sup>126</sup> Alternatively, electronic versions of relevant materials can be created for and posted directly on

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123. See Michael Geist, *Course Calendar* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/fcalen.html>>.

124. See Course Evaluation, *supra* note 1.

125. See *supra* notes 98-100 and accompanying text.

126. See, e.g., Mark Lemley, *Syllabus — Regulation of the Internet* (visited Nov. 1, 1997) <<http://tarlton.law.utexas.edu/lemley/reg-inet.html>>.

the course Web site.<sup>127</sup> This approach has the advantage of giving the professor the ability to tailor the materials more closely to the purposes of the assignment. There are, however, depending upon both the materials in question and the degree of public access to the materials, potential copyright infringement concerns to consider.<sup>128</sup>

Provided students have access to a fast network connection, placing the actual casebook online may also be an option in some instances. For example, Professor Lynn D. Wardle of Brigham Young University's J. Reuben Clark Law School has placed several chapters of his *Conflicts of Law* text online.<sup>129</sup> Others, such as Professor Craig Joyce of the University of Houston Law Center, have used the Web to post supplements to casebook materials that have become outdated.<sup>130</sup> In both instances, the speed and ease with which materials can be updated makes using the Web an excellent and inexpensive method of providing course readings to students. Moreover, students who feel more comfortable with the traditional paper form of casebook can also be accommodated by using software such as Adobe Acrobat, which enables users to download and print material in its original font and format.<sup>131</sup>

## 5. Model Exams and Answers

A frequent student request prior to examination periods is for sample copies of old exams to serve as study aids. At many law schools, students are advised to consult the reserve desk at the law library to obtain copies of such exams. Placing such material on a course Web site remedies this somewhat inconvenient process. In most instances, electronic versions of prior exams are readily available and little effort is required to convert them to the appropriate format for posting to the course Web page. Given the value of this material, it is not surprising to find that numerous professors have included both old exams and

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127. See, e.g., John Kasdan, *Computers and the Law* (visited Nov. 1, 1997) <<http://www.columbia.edu/~law9023/>>.

128. For details on copyright issues in cyberspace, see Jane C. Ginsburg, *Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace*, 95 COLUM. L. REV. 1466 (1995); Mark Lemley, *Dealing with Overlapping Copyrights on the Internet*, 22 U. DAYTON L. REV. 547 (1997).

129. See Lynn D. Wardle, *Conflict of Laws — Table of Contents* (visited Nov. 1, 1997) <<http://www.law.byu.edu/Publications/Wardle/Conflict/TableOfContents.html>>.

130. See Craig Joyce, *Copyright Casebook Home Page* (visited Nov. 1, 1997) <<http://www.law.uh.edu/faculty/CJoyce/cb2.html>>.

131. See, e.g., Peter Strauss, *Administrative Law* (visited Nov. 1, 1997) <<http://www.columbia.edu/cu/law/courses/admin/>>.

sample answers on their Web sites.<sup>132</sup> In fact, some Web sites, such as that of Professor Charles Pouncy of the University of Florida Law School, even include guidelines and tips for exam writing.<sup>133</sup>

## 6. Student Evaluations

When students contemplate their course selections, evaluations of former students frequently play an important role in the decision making process. At most law schools, such information is publicly available, but somewhat inconvenient to obtain. In response to student interest, some professors include their past student evaluations on their course Web site.<sup>134</sup> The Corporate Finance Web site of Professor David Altshuler of the University of Pennsylvania Law School is particularly detailed in this regard as it provides pie charts and statistical assessments of past student evaluations.<sup>135</sup>

## 7. Online Schedules

With the numerous demands on a professor's time, making oneself readily available to students outside of class can often be difficult. Scheduling meetings through a course Web site is an excellent means of enabling students to see precisely what meeting times are available and allowing them to plan their schedules accordingly. Although this may require the assistance of secretarial or support staff, personal information software such as Netscape Calendar already allows users to convert schedules to HTML format, and to post schedules and book meetings directly on the Web.<sup>136</sup>

Even without the benefit of such software, a variation on posting schedules is possible. For example, one requisite element of my Legal Research and Writing course was a one-on-one student meeting to discuss each student's progress and to address any further concerns or difficulties that they may have been experiencing. The traditional approach had been to post available meeting times on the instructor's office door and require students to sign up for an open slot. As an

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132. See Web Survey, *supra* note 8.

133. See Charles R.P. Pouncy, *How to Write an Essay Examination Answer* (visited Nov. 1, 1997) <<http://grove.ufl.edu/~rishmond/how.htm>>.

134. See, e.g., David Altshuler, *Law 768: Overall Instructor Ratings* (visited Nov. 1, 1997) <<http://www.law.upenn.edu/law768/eval2.htm>>.

135. See *id.*

136. See Netscape Communications Corp., *Netscape Communicator/Calendar* (visited Nov. 1, 1997) <<http://www.netscape.com/comprod/products/communicator/calendar.html>>.

experiment, I posted an identical schedule on the course Web site and gave my students the option of signing up online.<sup>137</sup> Although only a minority of students chose the online option, several students noted the convenience of such an approach. Furthermore, its popularity would likely rise with the growth of the aforementioned Web culture.

### B. A Way to Deliver New Information

It becomes relatively easy to add additional components or features to a course Web site once the basics are established. The examples that follow demonstrate that the Web allows for more than just an electronic repackaging of materials traditionally provided in paper form. Rather, the Web enables professors to rethink how they communicate with students and where the bounds of a class begin and end. Examples discussed below include discussion groups, Internet links, online publication of student papers, a class announcements page, and a course Frequently Asked Questions ("FAQ") page.

#### 1. Discussion Groups

Course discussion groups are an increasingly popular means of extending classes beyond their traditional in-class limits and a tool that should be regarded both as a way of delivering new information and as a new teaching tool. Such discussion groups, sometimes referred to as "virtual classrooms," have become standard practice at many schools.<sup>138</sup> For example, Villanova University School of Law now automatically establishes a discussion group for every course offered.<sup>139</sup>

The course discussion group can take many forms depending upon the goals and desires of the professor. For example, a discussion group can serve merely as an optional forum for out-of-class discussion.<sup>140</sup> Alternatively, a discussion group can be a course requirement with a student's participation tied to a certain percentage of his/her overall

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137. Students were asked to e-mail their top three choices for available meeting times. I updated the Web site nightly to reflect any changes that had taken place over the previous 24 hours.

138. See Ronald W. Staudt, *Does the Grandmother Come with It? Teaching and Practicing Law in the 21st Century*, 44 CASE W. RES. L. REV. 499, 509 (1994).

139. See Villanova Law Sch., *The Virtual Classroom* (visited Nov. 1, 1997) <[http://www.law.vill.edu/vls/virtual\\_class97/](http://www.law.vill.edu/vls/virtual_class97/)>.

140. See Columbia Law Sch., *Administrative Law* (visited Nov. 1, 1997) <<http://www.columbia.edu/cu/law/courses/admin/>>.

grade.<sup>141</sup> Some professors have even gone as far as opening a course discussion group to the general public, thereby encouraging an even greater range of discourse.<sup>142</sup>

Regardless of which option is employed, discussion groups can elicit participation from shy or withdrawn students and enhance students' in- and out-of-class experiences. From the professor's perspective, discussion groups provide an effective gauge of the general understanding of course material. Furthermore, discussion groups can be used to regulate class tension. Particularly emotional topics can result in frayed nerves in the traditional classroom dynamic. Discussion groups allow students to vent their frustrations and force them to carefully consider their responses, since writing e-mail is far different from speaking in class.

Where discussion groups are apt to take on an emotional tone, professors should be cognizant of the need to establish certain ground rules. These should emphasize that the virtual classroom is an extension of the actual classroom and that the same standards of mutual respect and courtesy apply. In fact, some professors have chosen to moderate the discussion group and thereby ensure that all contributions meet a basic standard of civility and serve to enhance, rather than detract from, the discussion.<sup>143</sup>

Discussion groups can also be used to conduct online tutorials.<sup>144</sup> For example, Professor Joel Reidenberg of Fordham University School of Law taught parts of his 1996 Contract law course exclusively online. Over a six-week period, Professor Reidenberg covered Statute of Frauds materials through a moderated discussion that included questions posed to the entire class and commentary on the responses received from students.<sup>145</sup> Students were able to develop their writing and technological skills through the use of this format and some students who appeared

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141. See, e.g., Columbia Law Sch., *Computers and the Law* (visited Nov. 1, 1997) <<http://www.columbia.edu/~law9023>>.

142. See, e.g., Tax Group at Emory Univ. Sch. of Law, *Homepage* (visited Nov. 1, 1997) <<http://tax.law.emory.edu/>>.

143. This issue was the subject of a lengthy discussion on the LAWPROF discussion group, in February 1997, with numerous faculty members providing insight based on their own experiences. See e-mail messages to the LAWPROF discussion group (Feb. 1997) (on file with author). Although free speech concerns were duly noted, most participants indicated that they established discussion group guidelines calling for "reasonable" behavior. See *id.*

144. See Joel R. Reidenberg, *The Borderless Classroom*, in 1997 AALS WORKSHOP ON TEACHING WITH TECHNOLOGY: FIRST STEPS AND BEYOND 55, 55-56 (1997).

145. See *id.*

uncomfortable in a traditional classroom setting were often outspoken and insightful in the e-mail setting.<sup>146</sup>

Although discussion groups can be conducted solely via e-mail, discussion groups can also be integrated with a course Web site, an approach that offers some advantages. First, hosting the discussion group from the course Web site helps to create a Web-based culture, since it requires students to become accustomed to checking the course Web site regularly to keep abreast of the discussion. Second, all contributions to the discussion group can be posted to the course Web site. This creates a semi-permanent transcript of the discussion available for subsequent consultation by the professor or students. Furthermore, since discussion groups often involve simultaneous discussion of several topics, posting each contribution enables participants to follow more easily the stream of the discussion. In fact, certain software programs, such as Lotus Notes,<sup>147</sup> allow for the creation of subject headings, which help to trace the flow of the discussion.

Newly created software programs even allow for the elimination of e-mail altogether. For example, NetMeeting,<sup>148</sup> a Microsoft product, allows participants to contribute to a discussion directly from the Web site by using a Common Gateway Interface ("CGI") script. CGI scripts allow users to submit information in forms directly through a Web site and, by using pre-programmed variables, receive immediate responses for informational requests and other data. Furthermore, CGI scripted contributions can be kept anonymous, which may encourage the participation of otherwise wary students.

## 2. Internet Links and Search Engines

Using the extensive materials available through the Internet can also enhance the out-of-class elements of a course. For example, numerous course Web sites include a list of links related to the topics covered in the course. These links have the potential to serve as a "jumping off" point for student research and may assist students to grasp the breadth of a particular topic.

There are several methods of organizing these links. First, the easiest and most popular approach is to place related links together as a

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146. See *id.* at 58.

147. This software is used by The West Educational Network ("TWEN"), a service that allows a Web-style course page to be created and hosted by West.

148. See Microsoft Corp., *NetMeeting Home* (visited Nov. 1, 1997) <<http://www.microsoft.com/netmeeting/>>.

matter of general interest.<sup>149</sup> This approach provides students with the initial assistance necessary to conduct effective Web-based legal research by narrowing the scope of the Web search. Alternatively, links may be categorized according to lecture topic. For example, I grouped my links so that they could be used as an extension of what was occurring in class. Accordingly, following a class on effective writing techniques, I provided links to an online version of Strunk's *The Elements of Style*<sup>150</sup> and to an online writing lab at Purdue University.<sup>151</sup> Professors teaching Cyberspace Law often employ a similar approach, since there is a wealth of relevant material available online.<sup>152</sup>

A course Web site may also include a search engine along with Internet links. For example, my Web site included a search form linked directly to the LawCrawler search engine.<sup>153</sup> The LawCrawler search engine allows users to conduct boolean searches of the FindLaw Web site,<sup>154</sup> one of the most comprehensive legal sites on the Web. By using the search engine on the course Web site, my students were able to conduct comprehensive legal research directly from the site and thereby better integrate coursework with their legal research.

### 3. Student Papers

For seminar courses, in which student contributions are often an integral part of the learning process, the posting of student papers on the course Web site can facilitate a scholarly and collaborative atmosphere.<sup>155</sup> These papers become an excellent additional source of course materials, which can be easily distributed to all participants through the seminar's Web site.

Moreover, by the end of the semester, the course Web site will effectively become a repository of potentially interesting yet unpublished

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149. See, e.g., Jessica Litman, *Seminar: The Law in Cyberspace* (visited Nov. 1, 1997) <<http://www.libraries.wayne.edu/~jlitman/sources.html>>.

150. William Strunk, Jr., *The Elements of Style* (visited Nov. 1, 1997) <<http://www.columbia.edu/acis/bartleby/strunk/>>.

151. See Purdue Univ., *Online Writing Lab* (visited Nov. 1, 1997) <<http://owl.english.purdue.edu/Introduction.html>>.

152. See, e.g., Michael Froomkin, *Law and the Internet* (visited Nov. 1, 1997) <<http://vipser.law.miami.edu/~froomkin/sem97/>>.

153. LawCrawler, *LawCrawler* (visited Nov. 1, 1997) <<http://www.lawcrawler.com/>>.

154. FindLaw, *FindLaw: Internet Legal Resources* (visited Nov. 1, 1997) <<http://www.findlaw.com/>>.

155. See, e.g., Kenneth P. Mortensen, *Information Law Clinic* (visited Nov. 1, 1997) <[http://www.law.vill.edu/vls/student\\_home/courses/info-law-clinic](http://www.law.vill.edu/vls/student_home/courses/info-law-clinic)>.



work and may attract the attention of scholars working in the field.<sup>156</sup> As discussed below, the potential of the Web with regard to publication has generated considerable excitement, since it allows for rapid dissemination and facilitates feedback to the author. At the student level, the receipt of outside feedback may help students hone their arguments and may also increase the likelihood of publication of student-authored papers in more traditional venues.

#### 4. Class Announcements

Using the Web to communicate with students through a class announcements page keeps students informed while effectively combining the Web with e-mail.<sup>157</sup> Such pages often include interesting legal developments or clarifications, as well as assignments and class scheduling issues. The Web enhances these class announcements by effectively creating an electronic billboard, with postings remaining available for perusal throughout the semester. Therefore, unlike e-mail, which is frequently deleted after being read, a Web-based class announcements page creates a semi-permanent record of all entries. The effectiveness of a class announcements page, however, may hinge on the development of a Web culture. In those instances where students do not regularly use the online component of a course, the timeliness of the class announcements may obviously be compromised.

#### 5. Frequently Asked Questions Page

A variation on the class announcements page is a course FAQ page. FAQ pages are helpful to professors in that they allow for recurring student questions to be answered in a singular and effective manner. As with the class announcements page, the effectiveness of a FAQ page may depend upon student willingness to consult the FAQ page regularly to determine if their questions have already been addressed. This feature proved to be the least successful of my course Web site. Students did not consult the FAQ with sufficient regularity to allow it to become a reliable means of communication, forcing me to revert to e-mail.

A FAQ page can be useful for more than just answering questions that arise during the course of the semester. For example, Professor Michael Froomkin of the University of Miami School of Law uses a FAQ page to address commonly held concerns of incoming students as

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156. See, e.g., Froomkin, *supra* note 152.

157. See, e.g., Queens Faculty of Law, *Business Associations* (visited Nov. 1, 1997) <<http://qsilver.queensu.ca/~flanagnb/biz/bnew.htm>>.

well as those students considering enrolling in his course.<sup>158</sup> The FAQ page thereby serves as a helpful resource to students while simultaneously freeing the professor from repeatedly addressing the same questions.

### C. A New Teaching Tool

The potential of the Internet extends far beyond providing students with electronic materials or bulletin boards. Rather, the possibility of teaching law in new ways will likely propel the Internet into the consciousness of legal education in a manner not yet achieved by CAI. The examples that follow, which include Internet-based CAI, simulations, virtual classes, class recaps, Web publications, and Web site work, are only the initial possibilities of where professors can go today on the Internet. The future scope of Internet use in legal education will depend upon the creativity and interest of legal educators worldwide.

#### 1. Computer Assisted Instruction

As noted earlier in this article, the power and potential of the Internet may force legal educators to rethink CAI. Previous incarnations of CAI suffered from the significant time and cost investments required, as well as the lack of available facilities and technical expertise to ensure success. Today, however, the Internet enables professors to create online tutorials quickly and easily.

Although this is a powerful claim, in my judgment the state of the Internet today sustains it. Over the past year, software programs that allow for effortless HTML creation have inundated the market. Professors are already taking advantage of this technology by creating online quizzes and other tutorials that enable students to take an active approach to course material review.<sup>159</sup> These exercises are not restricted to text, however; virtual simulations, video, and audio are now easily incorporated into tutorials that engage students as never before. Furthermore, hypertext breaks through the confines of early CAI by allowing students to conduct online legal research and analysis as part of the exercise. For example, some exercises require students to analyze

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158. See Michael Froomkin, *Administrative Law 200* (visited Nov. 1, 1997) <<http://www.law.miami.edu/~froomkin/adlaw/index.htm>>.

159. See, e.g., Jim Rossi, *Torts* (visited Nov. 1, 1997) <<http://www.law.fsu.edu/faculty/jrossi/97/torts/>>.

materials that they themselves find on the Internet, an option that traditional CAI simply could not provide.<sup>160</sup>

Perhaps most importantly, the creation of Internet based CAI exercises requires little or no technical expertise, since software programs produce the necessary coding. In fact, some faculty have not limited themselves to basic HTML. Professor John Kasdan of the Columbia Law School creatively overcame the absence of a traditional chalkboard in a computer classroom by creating a Java-based<sup>161</sup> chalkboard on his course Web site that allowed for the posting of notes in the front of the class by way of the computer screen.<sup>162</sup> In another example, Columbia Law School Professor William Sage's Web site uses a CGI script to conduct an online student survey.<sup>163</sup> Owing to the newness of this technology, predicting all the Internet's uses as a tool for CAI is difficult. However, given the release of Webolis, a Web-based CAI program,<sup>164</sup> it seems certain that there will be plenty of opportunities for legal educators to create new and exciting CAI tutorials that are unrestricted by the shortcomings of earlier efforts.

## 2. Simulations

The potential to make fictional stories real is one of the most exciting possibilities raised by the advent of the Internet. Since legal educators often employ hypothetical problems as a teaching tool, simulations are likely to become a popular method of conveying such problems. In fact, simulations have long been regarded as an excellent teaching tool that has been hindered by the constraints of earlier technology.<sup>165</sup>

Two recent Internet-based simulations illustrate their effectiveness. First, Professor Robert Lawless of the University of Missouri School of Law used his Mergers and Acquisitions course Web site to bring a hypothetical corporate takeover to life in a manner not possible with

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160. See, e.g., Michael Froomkin, *Jan. 17 Assignment: Law and the Internet* (visited Nov. 1, 1997) <<http://www.law.miami.edu/~froomkin/seminar/jan17.htm>>.

161. Java, an object-oriented computer language, was developed by Sun Microsystems Inc.

162. See John Kasdan, *TheScribbles* (visited Nov. 1, 1997) <<http://www.columbia.edu/~law9023/TheScribbles/>>.

163. See William Sage, *Introduction to the Regulatory State* (visited Nov. 1, 1997) <<http://www.columbia.edu/cu/law/courses/regstate/survey.html>>.

164. See *supra* note 15.

165. See Hazen & Hazen, *supra* note 62, at 195-97; John N. Drobak, Note, *Computer Simulation and Gaming: An Interdisciplinary Survey with a View Toward Legal Applications*, 24 STAN. L. REV. 712, 714-15 (1972).

conventional tools.<sup>166</sup> To bring the takeover to life, the Web site included fictional competing corporate press releases that indicated the corporations' respective positions concerning the hostile takeover, detailed "news coverage" as the events unfolded, and, periodically, new court submissions and decisions as the lawyers battled out the takeover in the courts. Students were encouraged to role-play based on the simulation and were undoubtedly able to appreciate better the mechanics of a hostile takeover, thanks to the real-life nature of the simulation.

The second example is a simulation I created for my Legal Research and Writing class.<sup>167</sup> This simulation required students to write a legal memorandum assessing whether images contained on a fictional Web site created by one Saleem Sinai, an exchange student from India, violated the *Communications Decency Act*.<sup>168</sup> Students were encouraged to consult the online version of the assignment, which contained all the instructions necessary to complete the memorandum. A fictional Web site was created, complete with actual links to matters of Indian interest and to the images in question. Furthermore, since the assignment required some legislative history analysis and assessment of *FCC v. Pacifica Foundation*,<sup>169</sup> the memorandum's instructions contained links to legislative history, an online version of the case, and the audio recordings of the actual arguments raised before the U.S. Supreme Court.<sup>170</sup> Feedback on the assignment was overwhelmingly positive as students clearly appreciated the "real-life" nature of the assignment.<sup>171</sup>

Although comprehensive simulations obviously involve a significant commitment of time and effort, my experience suggests that it is a worthwhile investment. Simulations have the power to involve students in a manner that traditional teaching tools cannot duplicate. Furthermore, a simulation encourages students to consult the course Web site regularly and thus may have the ancillary effect of increasing the use and effectiveness of other course Web site materials.

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166. See Robert M. Lawless, *Mergers and Acquisitions* (visited Nov. 1, 1997) <<http://www.law.missouri.edu/lawless/m%26a/>>.

167. See Michael Geist, *Memorandum* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/memo2.html>>.

168. Telecommunications Act of 1996, Pub. L. No. 104-104, tit. 5, 110 Stat. 56, 133-43 (codified in scattered sections of 18 U.S.C.A. & 47 U.S.C.A.).

169. 438 U.S. 726 (1978).

170. See Oyez, *supra* note 100.

171. Although, admittedly, many were disappointed with the "tame" nature of the images.

### 3. Virtual Classes

Although the virtual law school may still be many years away,<sup>172</sup> the virtual class may soon become a reality. Online discussion groups are becoming very common as professors search for ways to enhance their courses. Beyond the discussion group, however, the Internet has the potential to serve as a virtual classroom in other ways.<sup>173</sup>

For example, Professor Andrea Johnson of the California Western School of Law became one of the first law professors to use long-distance legal education in a live setting in January 1996. On an experimental basis, Professor Johnson taught an Advanced Telecommunications Law class to students at both the California Western School of Law in San Diego, California and the Cleveland-Marshall College of Law in Cleveland, Ohio.<sup>174</sup> The class, which had eight participants from each school, was conducted simultaneously at both sites using the Internet, tele- and videoconferencing, videotapes, and an electronic casebook.<sup>175</sup>

In order to test the effectiveness of the virtual class, Professor Johnson created a "control" telecommunications class, which met regularly in a traditional classroom setting and did not use the Internet technologies.<sup>176</sup> Although such tests are admittedly imperfect, Professor Johnson found that the technology served as a significant supplement to the learning process, with students in the Internet class exhibiting the same or deeper understanding of the material.<sup>177</sup>

Professor Johnson's findings were recently duplicated in a non-law setting. A professor at California State University randomly divided 33 students in a social statistics course into two groups.<sup>178</sup> One group was

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172. However, the virtual law school may not be as far away as some suspect. See, e.g., Robin Widdison, *Virtual Law School*, 8 Y.B.L. COMPUTERS & TECH. 185 (1994).

173. As the following examples illustrate, virtual classes can bring students from different law schools into a single "virtual" classroom with the potential for a unique and interactive learning experience. Furthermore, the possibility of professors branching out beyond their own law school may become a reality as videoconferencing technology develops.

174. See Andrea L. Johnson, *Distance Learning in Legal Education*, in 1997 AALS WORKSHOP ON TEACHING WITH TECHNOLOGY: FIRST STEPS AND BEYOND, *supra* note 144, at 43, 43.

175. See *id.*

176. See Susan E. Davis, *Remote Learning by Leaps and Bounds*, CAL. LAW., Aug. 16, 1996, at 49, 60.

177. See *id.*

178. See Jerald G. Schutte, *Virtual Teaching in Higher Education: The New Intellectual Superhighway or Just Another Traffic Jam?* (visited Nov. 1, 1997) <<http://www.csun.edu/sociology/virexp.htm>>.

taught in a traditional classroom setting while the other was taught exclusively via the Web. Using standardized lectures and exams, the virtual class scored 20 percent higher than the traditional class on the examinations.<sup>179</sup>

Using only discussion group or "chat" software, Professor Reidenberg recently taught a seminar class on constitutional principles and electronic democracy to students at Fordham University School of Law while physically located at the Wake Forest Law School in North Carolina.<sup>180</sup> Professor Reidenberg initiated discussion with an opening e-mail message to all seminar participants, who were connected to the Fordham computer network. Debate followed among students with Professor Reidenberg moderating the discussion as necessary.<sup>181</sup>

One of the first successful virtual classes originated at the University of New Mexico Law School. In the fall of 1995, Professor Scott Taylor used e-mail to conduct a seminar on Taxation in Indian Country.<sup>182</sup> The seminar consisted of ten local students who participated in person, and five Internet students who hailed from the University of Montana (two), the University of Ottawa, Washburn University, and the University of Wisconsin.<sup>183</sup> Each of the five Internet students registered for an independent study coursework supervised by a local law professor. The classes were not conducted live over the Internet; rather, the Internet students received class notes compiled by the local participants. All participants were required to complete several casenotes on assigned cases that were distributed amongst all the participants. Furthermore, all students were required to complete a major research project.<sup>184</sup> Professor Taylor's evaluation of the class was very positive, as he noted that the clinical elements of the course worked equally well via the Internet and that he had greater interaction with the Internet students than with the local students, who tended to contact him less frequently.<sup>185</sup>

Long-distance learning was also jointly featured as part of a Cyberlaw course conducted by Professor Larry Lessig and Mr. Jonathan Zittrain at the Harvard Law School and a Computer Law course conducted by Professor Peter Fitzgerald at Stetson University College of Law in the winter of 1997. Using technology known as multi-user

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179. *See id.*

180. *See* Reidenberg, *supra* note 144.

181. *See id.*

182. *See* Scott A. Taylor, *Teaching a Law Seminar over the Internet: Some Background* (visited Nov. 1, 1997) <<http://elj.warwick.ac.uk/elj/jilt/bileta/1996/3taylor/>>.

183. *See id.* at § 5.5.

184. *See id.* at § 5.6.

185. *See id.*

dungeon object-oriented ("MOO")<sup>186</sup> technology, students were able share virtual space online through the use of a text-based virtual reality.<sup>187</sup> In the Harvard-Stetson experiment, students from both classes occupied online rooms and conducted real-time discussions on topics such as encryption law and other cyberspace issues.<sup>188</sup> Professor Mitch Winick of the Texas Tech School of Law undertook a slightly less ambitious project in the fall of 1996 when he experimented with the use of Internet chat sessions as part of his Cyberlaw class.<sup>189</sup>

For those that find the above mentioned possibilities too futuristic, there are other, more "earthbound" possibilities. For example, I have created the Web Lecture, designed as an advanced CAI tutorial that enables the creator to lead lecture participants on a tour through the Internet.<sup>190</sup> The Web Lecture uses frames, which divide the browser page into two separate electronic documents. The top document contains lecture notes, other sources of guidance, and small icons that allow participants to advance to the next "page" of the lecture. The bottom document contains a link to a Web site relevant to the lecture discussion. For instance, in an Internet Legal Research Web Lecture, one page discusses the availability of Internet search engines, such as AltaVista.<sup>191</sup> The top document explains the types of searches that may be conducted and the bottom document presents AltaVista itself. Since both documents are "live," that is, online, the lecture participant is able to fully explore and use AltaVista and, when ready to continue, simply click on the forward icon contained in the top document.

There are several distinctive advantages of the Web Lecture. First, it allows lecture participants to complete the lecture anytime, anywhere (assuming network access), and at their own pace, since it always remains active on the computer server. Second, Web Lectures, such as the one described above, can serve as a starting point for conducting

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186. A MOO is a text-based virtual environment that allows participants to walk around, look at virtual objects, talk to other MOO participants, and create their own objects and buildings through the use of a series of text commands.

187. For further discussion of the MOO project, see Tari Lin Fanderclai, *MUD Info for the LawMOO Project* (visited Nov. 1, 1997) <<http://www.ucet.ufl.edu/~tari/lawmool/mudinfo.html>>.

188. See e-mail from Professor Peter Fitzgerald, Stetson University College of Law, to the Cyberprof listserv (Feb. 18, 1997) (on file with author).

189. See Texas Tech Univ. Sch. of Law, *Class Cybersessions* (visited Nov. 1, 1997) <<http://www.law.ttu.edu/cyberspc/classcyb.htm>>.

190. See Michael Geist, *Weaving the World Wide Web into Legal Education* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/pres1.html>>.

191. *AltaVista Search Network* (visited Nov. 1, 1997) <<http://www.altavista.digital.com/>>.

legal research on the Internet. For example, several of my former students have indicated that they use the Internet Legal Research Web Lecture on a regular basis as an important resource for their Internet based legal research. Third, the Web Lecture is suitable for virtually any legal topic. For example, an Environmental Law Web Lecture could include lecture notes detailing the powers of the Environmental Protection Agency ("EPA") in the top document and actual links to the EPA Web site on the bottom document. Fourth, since the Web Lecture is available over the Internet, it may be accessed and used by interested parties worldwide. For example, I have also created a Web Lecture that acts as a companion to this article.<sup>192</sup> In addition to presentation; at the Columbia Law School, Professor Jim Rossi at the Florida State University College of Law has used this Web Lecture for a local faculty presentation.<sup>193</sup>

The use of audio and video is another tool that can enrich the learning experience. The audio site of U.S. Supreme Court arguments, *Oyez! Oyez! Oyez!*,<sup>194</sup> provides visitors with a unique perspective on landmark cases by allowing them to actually hear the arguments that were raised. It is easy to envision the integration of this Web site as part of a moot court program. The Internet also makes the use of interactive video as a teaching tool easier. Previous attempts to create interactive video in law teaching met with failure due primarily to high costs.<sup>195</sup> However, digitized video suitable for the Internet is relatively easy and inexpensive to create,<sup>196</sup> a result that may herald an increased use of video as a teaching tool in the near future.

#### 4. Lecture Recaps

Providing students with lecture recaps is another increasingly common use of course Web sites.<sup>197</sup> This feature may take several forms. The easiest approach is to create an HTML version of the lecture notes from each class and to post them on the Web site after completion

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192. See Geist, *supra* note 190.

193. See e-mail message from Professor Jim Rossi, Florida State University College of Law, to the author (Feb. 14, 1997) (on file with author).

194. *Oyez*, *supra* note 100.

195. See Hogan et al., *supra* note 101, at 125 ("[I]nteractive video is certainly not a universally suitable method for all law teaching. In fact it might be argued that the cost of interactive videotape dictates that it should only be used where nothing else will do.").

196. I have had success creating digitized video using only a camcorder and video-in and -out capability.

197. See, e.g., David Shakow, *Federal Income Taxation* (visited Nov. 1, 1997) <<http://www.law.upenn.edu/fac/dshakow/fedtax/fedtax.htm#ClassNotes>>.



of the class.<sup>198</sup> Alternatively, slides and other multimedia tools already used by professors as a part of their in-class lectures can be converted into images and placed on the course Web site.<sup>199</sup> Regardless of which method is employed, the lecture recap feature enables students to review course material at their own pace and can be particularly helpful for exam preparation.

Posting lecture recaps is not without its risks, however. In particular, given the availability of the lecture recaps, it would seem that there is a very real possibility of a decline in student attendance. Although it can reasonably be argued that the benefits of class lectures extend far beyond the professor's lecture notes, there may be some reluctance to, in effect, reward those students who do not attend class by providing them with a copy of the lecture notes. Therefore, the use of lecture recaps will likely be limited to those professors who mandate student attendance or who have confidence in student willingness to use the recaps as a supplement to, rather than a replacement for, class attendance.

## 5. Web Publishing

The potential of the Web to serve as a platform for publishing scholarship is a topic that is garnering increasing attention.<sup>200</sup> Some professors are using their homepages to make available drafts of works in progress or of previously published articles.<sup>201</sup> Furthermore, the number of law reviews that are publishing a Web version is rapidly increasing.<sup>202</sup> Experience thus far suggests that the Web offers several distinctive advantages over traditional publishing formats, including the potential to add hypertext links to other documents, to add audio and video, and to create a public forum for further discussion or feedback on a particular paper.

Although this use of the Web clearly extends beyond the bounds of course Web sites, placing relevant articles on a course Web site has the potential to provide students with an excellent resource and source of information. For example, I have completed a Web version of an article

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198. See *id.*

199. See, e.g., Robert M. Lawless, *Class 25: Business Organizations* (visited Nov. 1, 1997) <[http://www.law.missouri.edu/lawless/bus\\_orgs/slides/class25/](http://www.law.missouri.edu/lawless/bus_orgs/slides/class25/)>.

200. See Hibbitts, *supra* note 21, at 616.

201. See, e.g., Michael Froomkin, *Welcome to Michael Froomkin's Homepage at the University of Miami Law School* (visited Nov. 1, 1997) <<http://www.law.miami.edu/~froomkin/>>.

202. See Hibbitts, *supra* note 21, at 661.

on foreign investment in Japan, originally published in 1994.<sup>203</sup> The Web version allows readers to explore aspects of the Japanese regulatory system by linking to legislation and organizations mentioned in the 1994 article. Such an article could prove valuable for a course on international trade and investment law and illustrates how this form of scholarship distribution could be replicated in numerous other courses.

## 6. Web Site Work

The University of Kansas School of Law's Elder Law Clinic features one of the most novel uses of a course Web site.<sup>204</sup> As part of their participation in the Elder Law Clinic, students assist in the development of a Web site devoted to elder law issues.<sup>205</sup> For example, the site contains annotated bibliographies on elder law topics prepared by second- and third-year law students enrolled at the clinic.<sup>206</sup> Development of the site enables students to better appreciate the scope of legal materials on the topic. Furthermore, students experience the technical side of Web site creation, developing skills that may be of considerable use in the future.

## III. CONCLUSION: WHERE WILL WE GO TOMORROW?

The development of the Internet is likely to mark a turning point in the computerization of legal education. Although only at the initial stages, the integration of the Internet through Web-based CAI, simulations, and virtual classes has already demonstrated that the computerization of legal education is no longer the exclusive domain of a select few technologically adept professors. Rather, the Internet enables legal educators with little or no computer training to experiment with innovative teaching methodologies and, in the process, to combine the best of CALR, CAI, and electronic casebooks and to excite law students uninspired by traditional law teaching techniques.

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203. See Michael A. Geist, *Foreign Investment in Japan: A Guide to the Legal Framework*, 9 BANKING & FIN. L. REV. 305 (1994), available at Michael Geist, *Foreign Investment in Japan: A Guide to the Legal Framework* (visited Nov. 1, 1997) <<http://www.columbia.edu/~mag76/fdi.html>>.

204. See Molly M. Wood, *Changing with the Times: The KU Elder Law Clinic and the Kansas Elder Law Network*, 44 U. KAN. L. REV. 707 (1996).

205. See Kim Dayton, *Welcome to Kansas Elder Law Network* (visited Nov. 1, 1997) <<http://www.ink.org/public/keln/>>.

206. See Wood, *supra* note 204, at 710.

In order to ensure an effective transition toward a central role for the Internet and computers in legal education, several concerns must be addressed. The development of a Web culture is critical for legal education to feel the full impact of computers and the Web. Today, e-mail usage is a popular form of communication in many law schools. Similarly, LEXIS and Westlaw usage has become commonplace among law students, many of whom would be surprised to learn that free, universal access is a relatively recent phenomenon. The use of the Web to provide course materials, to communicate with students, and to enhance teaching with CAI, simulations, and Web publishing also has the potential to become a fundamental aspect of the law school experience. For this to occur, however, legal educators must increasingly regard the Web as an integral part of their teaching by developing law course Web sites, experimenting with various forms of virtual classes, and enhancing their classes by stressing the out-of-class component of course offerings through discussion groups and Web-based research.

Technology, though remarkable by the standards of the 1970s and 1980s, still needs improvement. For example, network connectivity is often painfully slow for students accessing the Internet from remote locations, resulting in long download times of course materials. Furthermore, the power to use and manipulate Internet materials by, for instance, annotating case law or statutes found online, is still somewhat primitive.

Finally, the physical infrastructure of many law schools also needs to be upgraded. In the coming years, many law schools will have no alternative but to expend considerable resources to meet the expected student and faculty demand for network connectivity, wired classrooms, and Web-based learning.

Notwithstanding these concerns, the use of the Internet today already provides indications of the future direction of the computerization of legal education. Virtual classes, online dissemination of scholarship, and a learning experience unrestricted by the bounds of the classroom are among the possibilities now within reach of legal educators. In the 1960s and 1970s, pioneers such as John Harty, William Harrington, and Robert Keeton recognized the potential for computers to enhance legal education. Their work was instrumental in creating organizations such as LEXIS and CALI and in propelling legal education toward computerization. Today, the Internet provides new and exciting possibilities, awaiting only the next generation of Hartys, Harringtons, and Keetons. The imagination appears to be the only significant limitation on where one can go today in bringing computers and the Internet to legal education.

