

Michigan Journal of International Law

Volume 17 | Issue 3

1996

International Law and the Information Age

John K. Gamble

Pennsylvania State University at Erie

Follow this and additional works at: <https://repository.law.umich.edu/mjil>



Part of the [International Law Commons](#), [Internet Law Commons](#), and the [Legal Writing and Research Commons](#)

Recommended Citation

John K. Gamble, *International Law and the Information Age*, 17 MICH. J. INT'L L. 747 (1996).

Available at: <https://repository.law.umich.edu/mjil/vol17/iss3/9>

This Article is brought to you for free and open access by the Michigan Journal of International Law at University of Michigan Law School Scholarship Repository. It has been accepted for inclusion in Michigan Journal of International Law by an authorized editor of University of Michigan Law School Scholarship Repository. For more information, please contact mLaw.repository@umich.edu.

INTERNATIONAL LAW AND THE INFORMATION AGE†

John K. Gamble*

(With the research assistance of Donald Wagner)**

INTRODUCTION	748
I. INFORMATION-SEEKING TECHNIQUES	751
A. <i>Assumptions About, and Approaches to, Research</i>	752
B. <i>An Inventory of Electronic Systems</i>	760
1. LEXIS	760
2. WESTLAW	762
3. QUICKLAW	764
4. CD-ROM	766
5. The Internet	767
6. Discussion Groups, e.g., INT-LAW	770
7. Multilaterals Project	771
C. <i>Hypertext</i>	773
II. FUNDAMENTAL CHANGES TO INTERNATIONAL LAW	780
A. <i>Sources of International Law</i>	781
B. <i>Multilateral Negotiations</i>	783
C. <i>The Teaching of International Law</i>	787
III. USERS' SURVEY	789
CONCLUSIONS, PROGNOSTICATIONS, AND COUNTERPOINTS	793

† In preparing this work, I have benefited greatly from the advice and assistance of a number of people. First is Peter Rohn (University of Washington) whose Treaty Research Center was the first attempt in the world to use computers to assist in the scholarly study of international law. Professor Rohn not only introduced me to many of these ideas, but has, over the subsequent 25 years, sharpened my thinking about these matters. The following individuals assisted me in the development of earlier drafts: Peter Bekker (Winthrop, Stimson), William Burke (University of Washington), Jonathan Charney (Vanderbilt University), Don Fleming (University of New Brunswick), Keith Highet (George Washington University), Douglas Johnston (University of Victoria), Lyonette Louis-Jacques (University of Chicago), Charlotte Ku (American Society of International Law), Virginia Leary (State University of New York at Buffalo), Ronald Macdonald (University of Toronto and European Court of Human Rights), Melinda Renner (University of New Brunswick), Oscar Schachter (Columbia University), Stephen Schwebel (International Court of Justice), Fred Soons (University of Utrecht), Edwin Smith (University of Southern California), Peter Stott (Fletcher School of Law and Diplomacy), Larry Taulbee (Emory University), Detlev Vagts (Harvard University), Eduardo Valencia-Ospina (International Court of Justice), Jill Watson (American Society of International Law), Edith Brown Weiss (Georgetown University), and Paul Zarins (Stanford University).

* Professor of Political Science and International Law, Pennsylvania State University at Erie. Ph.D., University of Washington (Seattle) (1971); M.A., University of Washington (Seattle) (1969); B.A., The College of Wooster (Ohio State University) (1967).

** B.A., Pennsylvania State University (1996).

INTRODUCTION

The subject of this article is problematic because of the paucity of other work addressing the topic¹ and its amorphous and technical nature. I shall argue that the information age² will affect almost all aspects of how international law is made and studied, everything from theory to sources to research to teaching. Rather than limiting myself to one or two aspects of the changes brought by the information age, I offer a *tour d'horizon*.³ This risks superficiality, but is, I believe, consonant with my goal of stimulating discussion about issues that are important to the future of international law.

We are bombarded with "proof" that the information age will usher in unprecedented change in all aspects of our lives. Judge Manfred Lachs, writing in the *American Journal of International Law*, speculated that the computer might be the most important invention of all time.⁴ A generation earlier, Judge Lachs had anticipated the computer age when he delivered his first opinion from the bench of the International Court of Justice and stated that "the great acceleration of social and economic change, combined with that of science and technology, have confronted law with a serious challenge: one it must meet, lest it lag farther behind events than it has been wont to do."⁵

Throughout the centuries, international law scholars have seen the importance of technological developments. The railroad, steamship, telegraph, and satellite television all broadened the scope and added to the substance of international law, but changed its form little. Often changes were cast in terms of faster communications. Professor Brierly believed that "[m]odern science has given us vastly increased facilities

1. There are thousands of articles and monographs about the new information age and how it will affect every aspect of civilization, including some excellent scholarship about law in general, but there is virtually nothing that focuses on international law.

2. I am not enamored with the term "information age," but it seems most appropriate given the need to go beyond technology to examine behavior.

3. In the last year, I have addressed a number of professional meetings discussing a number of aspects of this broad subject. Two are especially pertinent since written versions of the remarks exist. See, e.g., John K. Gamble, *Broadening Access to International Law Resources Through New Technology*, 82 PROC. AM. SOC. INT'L L. 1 (1995); John K. Gamble, *International Law Research in the Information Age*, 13 CHINESE Y.B. INT'L L. 68-78 (1994-1995) [hereinafter CHINESE YEARBOOK].

4. Manfred Lachs, *Thoughts on Science, Technology and World Law*, 86 AM. J. INT'L L. 673, 683 n.59 (1992). In this particular article, Judge Lachs was referring to JOSEPH WEIZENBAUM, *COMPUTER POWER AND HUMAN REASON: FROM JUDGMENT TO CALCULATION* (1976).

5. *North Sea Continental Shelf* (F.R.G. v. Den., F.R.G. v. Neth.), 1969 I.C.J. 3, 230 (Feb. 20) (dissenting opinion of Judge Lachs).

and speed of communications[.]”⁶ Professor Rohn was one of the earliest to recognize the range of ways in which computers might assist in the study of international law when he wrote that computers “can be useful not only as retrievers of specific information but also as raisers of analytical questions.”⁷ Rohn’s observation presages a central point developed here: the information age means much more than a faster, more efficient way of conducting “business as usual.”

Few would argue that computers, the engines that drive the new information age, are having a pervasive influence on human activity. Whether the computer revolution is a once-in-a-millennium occurrence producing a Hegelian change in the quality and quantity of international law is another matter altogether. There has been too much hyperbole about amazing new technology that will transform the world.⁸ My own admonition notwithstanding, I have concluded, neither quickly nor comfortably, that the computer revolution *will be* that once-in-a-millennium change.

All of us see an ever-widening range of sophisticated tasks being performed by computers, but we may be less aware of the rapid advancement of these omnipresent machines. The entire history of electronic computers spans scarcely fifty years. Today’s fastest computers “run almost one trillion times faster” than the earliest models,⁹ and today’s computers store information much more cheaply than do print media. In his recent book, Microsoft President Bill Gates estimated that storing one page of text on a computer hard drive will cost “\$0.00021 per page — about one two-hundredth what the local copy center would charge at \$0.05 a page.”¹⁰

Many of the most significant developments of the 1990s have occurred in computer networks capable of transmitting vast amounts of

6. JAMES L. BRIERLY, *THE LAW OF NATIONS: AN INTRODUCTION TO THE INTERNATIONAL LAW OF PEACE* 42 (Humphrey Waldo ed., 6th ed. 1963).

7. Peter Rohn, *Canada in the United Nations Treaty Series: A Global Perspective*, 4 CAN. Y.B. INT’L L. 102, 119 (1966).

8. Microsoft founder Bill Gates put it this way:

You can flip through old *Popular Science* magazines and read about conveniences to come, such as the family helicopter and nuclear power “too cheap to meter.” History is full of now ironic examples — the Oxford professor who in 1878 dismissed the electric light as a gimmick; the commissioner of U.S. patents who in 1899 asked that his office be abolished because “everything that can be invented has been invented.”

BILL GATES, *THE ROAD AHEAD* xiii (1995).

9. WILLIAM KAUFMANN, III & LARRY L. SMARR, *SUPERCOMPUTING AND THE TRANSFORMATION OF SCIENCE* ix (1993).

10. GATES, *supra* note 8, at 119.

information at breathtaking speeds to any place in the world. Technology readily available today permits the transmission of about fifty single-spaced pages per second; this figure is expected to increase to 30,000 pages by the turn of the century.¹¹ The entire contents of every issue of the *American Journal of International Law* (since 1907) could be transmitted in about three seconds. To carry this example further, the nature of the *American Journal* has been influenced by the medium through which it has been delivered, i.e., a printed book of about 250 pages appearing quarterly. It already is available electronically¹² — what are the implications if this becomes the principal mode of dissemination?¹³ Professor Joshua Meyrowitz expressed the issue well:

Throughout history, the vessels in which ideas have been stored have come to be seen as the shape of knowledge itself. Yet to understand the impact of new media, we need to distinguish between the inherent complexity of specific ideas and processes and the superimposed complexity of the means through which we encode and describe them. It is conceivable, for example, that if the only way people learned to tie their shoelaces was through descriptions in print, tying shoelaces might be viewed as a skill that was “naturally” restricted to the highly educated.

Because of differences in coding, electronic media have led to a breakdown of the specialized and segregated information-systems shaped by print.¹⁴

I see three primary nexuses between international law and the information age. The first derives from the fact that international law is creating (or confirming) norms to manage the changes brought about by the new information age. For example, treaties have been drafted to codify rules for electronic forms of intellectual property.¹⁵ The role played here by international law is not conceptually different from its role in many other areas. International law, because of its broad sweep, will confront new situations created by the information age in the same way it responded to new developments made possible by space travel and drilling for oil on the outer continental shelf.

11. Ethan Katsh, *Law in a Digital World: Computer Networks and Cyberspace*, 38 VILL. L. REV. 403, 441 (1993).

12. LEXIS begins coverage with 1980, WESTLAW with 1982.

13. Some foresee major changes to scholarly journals. See Lauren H. Seiler, *The Future of the Scholarly Journal*, 74 MOD. LANGUAGE J. 1 (1990).

14. JOSHUA MEYROWITZ, *NO SENSE OF PLACE* 79 (1985).

15. See, e.g., Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite, May 21, 1974, 1144 U.N.T.S. 3 (entered into force Aug. 25, 1979).

The second and third relationships are more complicated and have broader implications. Computers have made it possible to find international law, or at least its building blocks, much more easily and efficiently than previously possible and to move effortlessly and instantly from one building block to another. The information age has already produced profound changes in the way many of us *seek* international law, regardless of whether we are students, teachers, practitioners or judges. These changes are discussed in Part I.

The third relationship is the most elusive and has the most far-reaching consequences. Will the changes brought about by the information age be so fundamental that they alter the basic structure and processes and, ultimately, the corpus of international law? This question is explored in Part II.

There is another aspect to international law and the information age that must be examined. In many industrialized countries, there has been at least a decade of experience with electronic systems for accessing international law. Certainly there is the possibility of a fundamental shift in the way we find, use, and perhaps even create international law. But we know little about how extensively technology is being used and people's experiences with it. Especially in the United States, international law tends to be marginalized.¹⁶ It is entirely possible that international law scholars find their interests are served inadequately by the sophisticated systems developed for municipal law; some may feel that the information age is passing them by. In order to assess the use of, and satisfaction with, electronic systems, I sent a questionnaire to more than 1,000 teachers and practitioners of international law. The results are discussed in Part III.

I. INFORMATION-SEEKING TECHNIQUES

This section deals with the changing modes available for finding international law and relates these new modes to research strategies and to the theoretical bases of international law. The wide variety of international legal research¹⁷ makes generalization difficult. Much research is quite narrowly focused. In fact, aspects of legal training, such as the briefing of cases, tend to emphasize a narrow focus. Other research is

16. For a lengthy discussion of this issue, see JOHN K. GAMBLE, *TEACHING INTERNATIONAL LAW IN THE 1990S* (Studies in Transnational Legal Policy No. 24, 1992).

17. For a discussion of additional aspects of international law research, see CHINESE YEARBOOK, *supra* note 3.

more broadly focused and conceptual.¹⁸ Professor Bin Cheng addressed one of the most pertinent distinctions in international law research:

We have seen that those international lawyers who are said to be rule-oriented and those who are said to be process-oriented arrive at different conclusions as to the identity and content of international law. . . .

In fact, one suspects that the real difference is not between rule-orientation and process-orientation, but between those who look upon law as a social reality and fact, the objective existence of which can be established and verified empirically, and those who regard law as the escalator to some transcendental goal towards which the community is assumed to wish to travel or ought to travel.¹⁹

To what extent can or should international law research be empirical? Many believe law must have a normative dimension, but does that preclude an examination of the facts of actual state behavior? Professor Reisman, reflecting the policy-oriented school, held that empiricism produces "a richer, more dynamic and more realistic picture of the way things are done[.]"²⁰ Judge Lachs put his finger on the dilemma when he wrote, "[c]learly a mere accumulation of details offers no more than knowledge of a narrow path; generality alone condemns to abstraction."²¹ A major issue is the extent to which the conceptual processes that drive research and writing about international law were conditioned by old modes of finding information, modes that usually were normative, often to the exclusion of empiricism.

A. Assumptions About, and Approaches to, Research

Every international law scholar over the age of 40 learned to conduct research using an information-seeking strategy that soon will be inefficient and outmoded. Essentially the same strategy applied to court

18. Ambassador Shabtai Rosenne argued that "the techniques and methodology of research in international law do not differ from the corresponding techniques and methodologies of research commonplace in internal legal systems." SHABTAI ROSENNE, PRACTICE AND METHODS OF INTERNATIONAL LAW 1 (1984). This makes it easier to discuss research without necessarily ascribing a unique place to international law.

19. Bin Cheng, *Epilogue* to INTERNATIONAL LAW: TEACHING AND PRACTICE 201, 204-05 (Bin Cheng ed., 1982).

20. W. Michael Reisman, *Law from the Policy Perspective*, in INTERNATIONAL LAW ESSAYS: A SUPPLEMENT TO INTERNATIONAL LAW IN CONTEMPORARY PERSPECTIVE 1, 5 (Myres McDougal & W. Michael Reisman eds., 1981).

21. MANFRED LACHS, THE TEACHER IN INTERNATIONAL LAW 201 (1982).

cases, papers for professional meetings, and articles for journals. The strategy began with the search for pertinent primary and secondary sources of information. Indices were available to help with the search, but beyond a vague, semi-intuitive notion that the topic had been covered adequately, we never knew when we were finished.

Scholars often used an authoritative source, checking carefully for any reference to the topic. In North America, this authoritative source often was the *American Journal of International Law*. We assumed that if the international legal issue or problem was not addressed in the *American Journal*, it probably did not deserve much attention. Conversely, if it had been dealt with, the legitimacy of the inquiry increased.²² This traditional mode of research tended to be deductive and normative. The researcher developed an idea for a paper or an article in a deductive way based on education, experience, disposition, and world view, suggesting that a particular topic was important relative to the norms that are the bedrock of law. The process occurred within the context of a huge amount of information in absolute terms, but relative scarcity, since, at least at the outset, it seemed difficult to find enough information to build a coherent argument. We all developed coping behaviors, e.g., our research foci might be narrowed or changed entirely to accommodate this scarcity.

Let me illustrate this traditional information-seeking mode with examples from two widely-respected works about the International Court of Justice published a decade apart.²³ Few issues in international law have attracted more attention over the last fifty years than the under-use of the International Court of Justice, especially the operation of the so-called Optional Clause of the Statute.²⁴ Much scholarship on this issue begins with the assumption that, if more states accepted the Clause, the Court would be used more often.²⁵ One of the best examples is the work of Professor Gross:

The declarations by which states accepted the jurisdiction of the Court as compulsory are studded with reservations, the most

22. Alas, the sword is dual-edged. The legitimization must not be so thorough that someone else has completed the research already.

23. *THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE* (Leo Gross ed., 1976); *THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS* (Lori F. Damrosch ed., 1987).

24. "The States parties to the present Statute may at any time declare that they recognize as compulsory *ipso facto* and without special agreement, in relation to any other State accepting the same obligation, the jurisdiction of the Court in all legal disputes" *STATUTE OF THE INTERNATIONAL COURT OF JUSTICE* art. 36(2).

25. One of the earlier works questioning this assumption was JOHN K. GAMBLE & DANA D. FISCHER, *THE INTERNATIONAL COURT OF JUSTICE: AN ANALYSIS OF A FAILURE* 15-17 (1975).

damaging of which is probably still the so-called self-judging and automatic Connally Amendment to the United States Declaration of 1946. The extent of harm done to the legal framework constituted by such reservation will be appreciated if it is borne in mind that most reservations are available on the basis of reciprocity to states which have not made them. . . . While there were reservations to the instruments relating to the Optional Clause, those included in the post-1945 era are particularly rampant and retrogressive, for they constitute so many attempts to re-introduce voluntarism through the back door of reservations to the declarations, which, it was hoped, would establish firm commitments.²⁶

In this work, published in 1976, Professor Gross and other scholars of the Court usually began with deductive assumptions and sought supporting examples, instances where states seem to have avoided the Court.

A few scholars were more empirical in their analyses. Professor Anand examined Third World views toward the Court and found that the post-1945 Court "does not show that the new nations of Asia and Africa are particularly reluctant to submit their disputes to international adjudication or that the reasons for their reluctance to go before the Court more often are related to their different religious or cultural backgrounds."²⁷ Guenther Weissberg seemed almost statistical when he wrote:

Of the 75 members who joined the U.N. since the end of 1955, the overwhelming majority are from the Afro/Asian grouping. Only thirteen of these, including Japan who did so after becoming a member of the Organization, though she had been a party to the Statute since April 2, 1954, and nine members of the British Com-

26. Leo Gross, *The International Court of Justice: Consideration of Requirements for Enhancing Its Rôle in the International Legal Order*, in 1 *THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE*, *supra* note 23, at 22, 30-31.

27. R.P. Anand, *Role of International Adjudication*, in 1 *THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE*, *supra* note 23, at 1, 15. Anand continued:

It must be stressed, however, that neglect or disregard of the International Court is not confined to the new Asian-African states. The old and powerful states have generally not given whole-hearted support to the Court. The declarations accepting compulsory jurisdiction of the Court have been riddled with extravagant and damaging reservations which tend to be doubly harmful. They not only frustrate attempts to establish a rule of law even amongst the like-minded states, but show an example to the newly emerging Asian-African states which are already oversensitive about their hard-won independence. As in many other matters, the new states follow the example set by the "older" and more experienced states. It is for these states, therefore, who claim to call themselves leaders and champions of the rule of law, to give further guidance and encouragement in this regard.

Id. at 16.

monwealth, have accepted the optional clause. Thus the acceptance of compulsory jurisdiction under Article 36(2) of the Statute has shrunk from a 1:2 ratio for the pre-1955 U.N. members to approximately 1:5 for the more recent members.²⁸

Ambassador Rosenne contributed a fascinating survey of elections to the Court:²⁹

Although prudence is required before drawing conclusions from this, it appears reasonably clear that the presence or absence of a national of either of the parties among the members of the Court has not been in itself a major factor in the policy decision to have recourse to the Court. Of more significance is the fact that in all the cases in which a national of one of the parties was already a member of the Court, the other party, whether applicant or respondent, exercised its right under Article 31, paragraph 2, of the Statute to choose what for convenience might be called an "equalizing" judge *ad hoc*. On the other hand, there have been two instances only, coming within paragraph 3 of that Article, in which both parties were seemingly in agreement not to appoint a judge *ad hoc*, and one case in which the respondent party insisted on exercising its right, the applicant party then following.³⁰

However, many of the contributions to this 1976 volume avoid almost any mention of actual state behavior *vis-à-vis* the Court. For example, Dan Ciobanu undertook a constitutional interpretation of the Statute, significant and interesting, but not linked directly to state actions.³¹ Arthur Rovine's piece seemed to demand an empirical analysis of state behavior:

The International Court of Justice is clearly the least successful and most disappointing major organ of the United Nations system, not for want of skilled personnel or quality of output, but simply because nations do not wish to use it. Its opportunities to contribute to world order are extraordinarily few and usually unimportant;

28. Guenter Weissberg, *The Role of the International Court of Justice in the United Nations System: The First Quarter Century*, in 1 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 131, 161.

29. Shabtai Rosenne, *The Composition of the Court*, in 1 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 377, 379-81.

30. *Id.* at 402.

31. Dan Ciobanu, *Litispence Between the International Court of Justice and the Political Organs of the United Nations*, in 1 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 209.

its influence negligible and its place in the international arena hardly assured as a result.³²

Mr. Rovine's argument illustrates the desirability of a closer examination of state attitudes and behaviors manifest in decisions to use or not to use the Court.³³ But, at least in this piece, he did not undertake such an examination. In a similar vein, Professor Fitzmaurice dealt with state preference for diplomatic negotiation instead of recourse to a Court which "they do not [understand] and tend to distrust[.]"³⁴ Fitzmaurice's contention could have been explored further with an empirical examination of state actions. The final article in this volume, another contribution from Professor Gross, looks at patterns in the selection of judges. It meticulously tabulates the nationalities of the judges and is somewhat critical of the fact that certain well-qualified individuals have not been elected "because the States of their nationality do not belong to any efficient vote-trading bloc in the United Nations."³⁵

The second work about the Court was published in 1987 and as such falls in the shadow of the case, *Military and Paramilitary Activities in and Against Nicaragua*.³⁶ Professor Damrosch writes in the introduction that the *Nicaragua* case "significantly changes the U.S. relationship to the Court but does not mean that the United States is no longer concerned with the Court."³⁷ This simple statement, ascribing such importance to one case and to U.S. acceptance of the Optional Clause, illustrates both the normative and deductive bent to international law scholarship.

One of the last major articles in Professor Gross' long career, *Compulsory Jurisdiction under the Optional Clause: History and Practice*,³⁸ begins in the same way as many of his earlier pieces, i.e., by describing the history of the Optional Clause, but then examines state behavior:

32. Arthur W. Rovine, *The National Interest and the World Court*, in 1 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 313.

33. *Id.* at 325.

34. Gerald Fitzmaurice, *Enlargement of the Contentious Jurisdiction of the Court*, in 2 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 461, 463.

35. Leo Gross, *Conclusions*, in 2 THE FUTURE OF THE INTERNATIONAL COURT OF JUSTICE, *supra* note 23, at 727, 744.

36. *Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.)*, 1986 I.C.J. 14 (June 27) [hereinafter *Nicaragua* case].

37. Lori F. Damrosch, *Introduction to THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS* xvii, xvii (Lori F. Damrosch ed., 1987).

38. Leo Gross, *Compulsory Jurisdiction Under the Optional Clause: History and Practice*, in THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS, *supra* note 37, at 19.

Of the 47 states only 3 members (Costa Rica, Haiti, Nicaragua) and two non-members accepted the Optional Clause without any reservations. Out of the nominal "international judicial community" of 161 states . . . less than thirty percent have contracted-in and [sic] -out and only 5 have not contracted-out. This compares with 52 states parties to the Protocol of Signature of the P.C.I.J . . . of which 40, that is nearly 73% of the "international judicial community," had accepted the Optional Clause. As the nominal international judicial community increased, the percentage of states accepting the Optional Clause declined.³⁹

What really sets this article apart is the way Gross went on to tabulate World Court cases, classifying them according to whether the Optional Clause was used.⁴⁰ Professor Gross' approach here is similar to approaches that are now becoming possible in the information age. Many of the other articles in this volume clearly were reactions to United States actions during the *Nicaragua* case. Professor Franck and Jerome Lehrman wrote: "This series of American moves reflects more than the ordinary pique of a losing litigant. It also represents the first application of the Reagan Administration's radical new theory about international law and institutions which has far-reaching implications."⁴¹ Like many international law academics, I went on record opposing U.S. actions in this case and, more generally, the Reagan administration's attitude toward the Court and toward international law.⁴² That said, it is easy to overstate the importance of the U.S. actions, in a sense letting a normative stand obscure an empirical analysis of state actions. Another article in the 1987 volume reasoned that, with the United States termination of its Optional Clause obligation, attention should be directed at

39. *Id.* at 23 (footnotes omitted).

40. *Id.* at 43-46.

41. Thomas M. Franck & Jerome M. Lehrman, *Messianism and Chauvinism in America's Commitment to Peace Through Law*, in *THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS*, *supra* note 37, at 3, 3.

42. John K. Gamble, *International Law in the Reagan Years: How Much of an Outlier?*, 23 *AKRON L. REV.* 351 (1990).

The obvious conclusion is that . . . the Reagan administration . . . falls at the low end of the continuum in terms of respect for, and attention to, international law. The Reagan years were characterized by a systemic self righteousness, an attitude that seems to say "we know we are right, just and peaceloving, so don't complicate matters with reference to minutiae of international law." That approach ignores the fact that we must co-exist with 165 other states, most of whom are unwilling *a priori* to concede the moral high ground to the United States.

Id. at 370.

compromissory clauses.⁴³ However, the article focuses more on the existence of such clauses than on their use.

Scholarship about the World Court seems to be shaped by two distinct forces. First, there is a strong tendency to be normative.⁴⁴ Second, many researchers do not admit the utility of empiricism, i.e., examining actual state behavior *vis-à-vis* the Court. Those who employ empiricism are much more likely to focus on "inputs" or constitutional elements, such as reservations to the Optional Clause or possible interpretations of the Statute, rather than examining decisions of the Court and the processes and developmental factors that produce them. There are a few examples where "outputs" were examined. A good illustration is Professor Weiss' piece on judicial independence wherein she concluded, "the record does not reveal significant alignments, either on a regional, political, or economic basis."⁴⁵ There remains a bias against empiricism, perhaps a throwback to international law's natural law epoch. Typical is Bing Cheng who, with unbridled skepticism, wrote "if we wish really to quantify international law[.]"⁴⁶

I selected the example of the Court because it is an area where international law can most easily be empirical, since the volume of information is so modest. Professor Gross and others could be relatively more empirical in their research only because of the fundamental failure they were trying to remedy, to wit, the under-use of the Court. If the Court had been as busy from 1920 onwards as it has been since 1990, it would have been difficult to carry out this work without using modern electronic methods,⁴⁷ which I am told Gross avoided.⁴⁸

This matter of approaches to international legal research has additional implications. Scholars in all disciplines develop a grasp of a subject that permits deductive assumptions to guide research and scholarship. Deduction can be the common sense that guides research, providing a logical test and some idea of how to make research manageable. For example, after years of studying the World Court, Professor

43. Fred L. Morrison, *Treaties as a Source of Jurisdiction, Especially in U.S. Practice*, in *THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS*, *supra* note 37, at 58.

44. Cheng, *supra* note 19.

45. Edith Brown Weiss, *Judicial Independence and Impartiality: A Preliminary Inquiry*, in *THE INTERNATIONAL COURT OF JUSTICE AT A CROSSROADS*, *supra* note 37, at 123, 134.

46. Cheng, *supra* note 19, at 213.

47. See Rohn, *supra* note 7.

48. Professor Gross wrote his manuscripts in a distinctive hand on reams of legal pads and did not have a typewriter, let alone a computer terminal, in his office. Interview with Dr. Charlotte Ku, a former student of Professor Gross.

Gross and others believed the Optional Clause was an important matter. The strength and power of modern computers permits people with no substantive background to ask sweeping questions, questions that might not be guided by any knowledge of the field. For example, one could ask a computer for a statistical profile of those states most likely to appear before the World Court in contentious cases. The answer might be meaningless; one hopes a scholar of the Court would point out sterile or tautological results. Deduction is not perfect either; Professor Gross and others may have ascribed too important a role to the Optional Clause.⁴⁹

International law is "moving inevitably toward a computer-based mode of research."⁵⁰ This fundamentally different information-seeking strategy makes available unimaginable quantities of information including *inter alia* electronic "card" catalogues, CD-ROM systems providing the full text of major journals and massive indices, gophers⁵¹ on the global Internet affording access to thousands of international law documents, the World Wide Web with its automatic hypertextual linkages, and, finally, the two commercial legal information behemoths, LEXIS and WESTLAW.⁵² Of course, availability is very limited in the Third World and a clear generational gap exists⁵³ in the alacrity with which international law scholars embrace these new techniques. A hallmark of this new era is markedly different methods for seeking information, electronic methods that are incredibly faster and also qualitatively different.

49. GAMBLE & FISCHER, *supra* note 25, at 94-103; see also Gary L. Scott & Craig L. Carr, *The ICJ and Compulsory Jurisdiction: The Case for Closing the Clause*, 81 AM. J. INT'L L. 57, 64 (1987) ("Thus, only three cases support the notion that compulsory jurisdiction under Article 36(2) is viable in the international legal system and these cases, for reasons explained above, do not generate a great deal of positive evidence.").

50. Detlev F. Vagts, *The International Law Communications Network: Four Decades of Change*, in RECHT ZWISCHEN UMBRUCH UND BEWAHRUNG: FESTSCHRIFT FÜR RUDOLF BERNHARDT 286 (U. Beyerlin et al. eds., 1995).

51. "Gopher" is a technique for finding information by using menus, from which one can choose documents, etc., to be viewed. Gophers can be contained within other gophers. Many people were introduced to computer networks by way of gophers. The name was coined at the University of Minnesota where it is a triple entendre: the name of their athletic teams, an animal that can burrow to find things, and the English words "go for." For an easy-to-follow discussion, see ED KROL, *THE WHOLE INTERNET* 233-64 (2d ed. 1994).

52. See Paul Zarins, *What's Online in International Law*, ASIL NEWSL., Nov.-Dec. 1992, at 11-12. Mr. Zarins writes regularly for the *ASIL Newsletter* and does a superb job of explaining these issues so that even the computerphobic can understand.

53. This generation gap is documented in part III.

B. *An Inventory of Electronic Systems*

There are literally thousands of databases available for finding international law information. Here, I shall describe some of the more comprehensive and widely used systems in the United States and Canada and assess developing trends of their use and coverage.

1. LEXIS

Virtually all law students in the United States learn LEXIS (and WESTLAW) as a basic part of their legal education. LEXIS, the first of the two large commercial systems, is more than twenty years old.⁵⁴ LEXIS's coverage of Canada, England and Wales, Europe and the European Union, and France appears to be good.⁵⁵ However, it is weaker in two areas most important to international law scholars, treaties and World Court cases. No comprehensive coverage is provided either of the Permanent Court of International Justice or the International Court of Justice. In fact, LEXIS purports "[t]o follow important International Court of Justice decisions as selected by the American Society of International Law."⁵⁶ There is a subsection of LEXIS's "international law library"⁵⁷ called "treaties and agreements" that includes the following:

GATT	General Agreement on Tariffs and Trade, Uruguay Round signed 12/13/93 with Annexes 1-4.
NAFTA	North American Free Trade Agreement, 10/7/92 Agreement with Annexes 1-7 and 9/13/93 supplemental agreement.
BDIEL	Basic documents of International Economic Law
ILMTY	International Legal Materials — treaties, agreements and recent actions from January 1980.
TNI	Tax Analysts' Tax Notes International from June 1984.
USTRTY	Oceana Treaties from 1783. ⁵⁸

54. See Katsh, *supra* note 11, at 456.

55. See LEXIS-NEXIS, REED ELSEVIER PROPERTIES, INC., DIRECTORY OF ONLINE SERVICES 25, 48-49, 56-59, 72-73 (Lorraine Gongla-Copponger ed., 1995).

56. LEXIS-NEXIS, REED ELSEVIER PROPERTIES, INC., INTERNATIONAL SEARCH TIPS 12 (1995).

57. For an interesting discussion of whether it is helpful or misleading to call these electronic entities "libraries," see Katsh, *supra* note 11, at 458-64.

58. LEXIS-NEXIS, *supra* note 55, at 88.

The ILMTY file does contain the treaties published in the American Society's *International Legal Materials*; this is a valuable source. But space limitations reduce coverage, and subsequent ratifications, accessions, and other modifications are difficult to locate. Trade-oriented treaties such as the NAFTA have the best coverage.⁵⁹ This is ironic because economic law is the subfield of international law that has led in making systematic use of the tools of the information age, and probably has less need of coverage in a comprehensive system such as LEXIS.⁶⁰ Those not on restricted academic accounts have access to the USTRTY file that "provide[s] the full text of U.S. treaties from 1783 to the present."⁶¹ However, the restricted access to the file, coupled with its limitation to treaties to which the U.S. is party, means that LEXIS's coverage of treaties leaves much to be desired. Just one example of this shortcoming is the 1969 Vienna Convention on the Law of Treaties.⁶² This is certainly one of the most important treaties of this century; yet I could not find the text of it in LEXIS despite the fact that hundreds of references to the treaty were instantly located. Of course, it should be acknowledged that if one had a non-academic account (a luxury many cannot afford) the 1969 Convention would be found in the USTRTY file save for the fact that the United States is not a party. In a last ditch effort to find this important treaty, one might look to the French ACCORD file, but this also fails since France neither signed nor ratified the 1969 Convention.⁶³ This serves to highlight the inadequacy of the "U.S. as a party" criterion for developing a treaty database, a problem mitigated, but not solved, by the inclusion of *International Legal Materials*.

There is a "publications" subsection of the international law portion of LEXIS. It lists only 11 items, but contains several of the most widely used periodicals, including the *American Journal of International Law*, *Foreign Affairs*, *International Legal Materials*, and *The International Lawyer* along with some highly specialized, esoteric items, e.g., *Middle*

59. Some 33 NAFTA documents are offered; they appear to be comprehensive and up-to-date.

60. The ASIL has published a guide to using LEXIS and WESTLAW. AMERICAN SOC'Y INT'L L., ASIL BULL. NO. 3, BASIC DOCUMENTS OF INTERNATIONAL ECONOMIC LAW ONLINE: QUICK REFERENCE TO LEXIS AND WESTLAW CITATIONS (1994).

61. See Paul Zarins, *What's Online in International Law*, ASIL NEWSL., June-Aug. 1994, at 20.

62. Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331 (entered into force Jan. 27, 1980).

63. *Multilateral Treaties Deposited with the Secretary-General, Status as at 31 December 1991*, at 825, U.N. Doc. ST/LEG/SER.E/10, U.N. Sales No. E.92.V.4 (1991).

East Executive Reports.⁶⁴ Journals and law reviews, listed in a separate section, total about 260, including about half of the approximately 45 international law journals affiliated with law schools published in the United States.⁶⁵ This represents a huge increase in coverage in less than two years,⁶⁶ but most journals' coverage starts only with 1993.⁶⁷

2. WESTLAW

WESTLAW contains 132 databases in its international law section.⁶⁸ The list is simultaneously strange, wonderful, frustrating, and disappointing. The three initial subsections in this part of WESTLAW deal with U.S. federal case law, statutes, rules and regulations, and administrative law.⁶⁹ Everyone who has attempted research in international law realizes that such materials contain a relatively small proportion of the information relevant to international law, but they are important nonetheless. These same three sections are repeated in almost all other "topic materials," giving the illusion that the database is much larger than it really is. My impression from reading the list in the international law section is that most of this material is *not* principally international law, and in some instances is related to international law in only the most tangential way. *European Directory of Agrochemical Products*⁷⁰ and *P.R. Newswire*⁷¹ seem especially far removed. I found myself wondering if the people designing the section had any background in international law.

The final portion of WESTLAW's international law section, entitled "texts and periodicals," contains only four entries: *International Joint Venture*, the *Journal of International Taxation*, *Clark Boardman-International Capital Markets and Securities Regulation*, and the *European Community Business Law: Sourcebook*, along with a catchall category,

64. LEXIS-NEXIS, *supra* note 55, at 88-89.

65. *Id.* at 93-95.

66. *Cf.* LEXIS-NEXIS, MEAD DATA CENTRAL, INC., LIBRARY CONTENTS, ALPHABETICAL LIST, QUICK REFERENCE 42 (1993).

67. LEXIS-NEXIS, *supra* note 55, at 93-95.

68. WESTLAW, WEST PUB. CO., WESTLAW DATABASE LIST 152-58 (Winter/Spring ed. 1995).

69. *Id.* at 152.

70. *Id.* at 155.

71. The description of the Newswire reads, "The complete text of news releases prepared by companies; public relations agencies; trade associations; city, state, federal and non-U.S. government agencies; and other sources covering the entire spectrum of the news." *Id.* at 156.

“law reviews, texts and bar journals.”⁷² This might suggest to the user that major international law journals are excluded. This certainly is not the case; a separate section, “individual publications,” lists more than 600 journals, including the *American Journal of International Law*,⁷³ *American Society of International Law Proceedings*,⁷⁴ the *Columbia Journal of Transnational Law*,⁷⁵ *Harvard International Law Journal*,⁷⁶ *The International Lawyer*,⁷⁷ the *Michigan Journal of International Law*,⁷⁸ and the *Yale Journal of International Law*.⁷⁹ WESTLAW casts such a broad net that it “catches” most international law journals published in the U.S. This might seem too good to be true, and it is.

Although WESTLAW provides coverage of some forty-five international law journals, coverage usually begins in the early to mid-1980s, not with the first issue of the journal. Even more detrimental is the fact that coverage “is selective unless indicated otherwise.”⁸⁰ Only about 15% (92 of 600) of the journals have full coverage.⁸¹ In the case of international law journals, only three of 46 (7%), the *American Journal of International Law*, *American Society of International Law Proceedings*, and the *Virginia Journal of International Law*, have full coverage of every article, and coverage does not begin until 1982 for the first two publications and 1983 for the last.⁸² One must realize that more than 10,000 articles have been published in international law journals in the United States; WESTLAW contains fulltext coverage of fewer than one quarter of these. This situation will improve slowly with time, but relying on WESTLAW’s subjective judgments about which articles will be included is problematic. Furthermore, coverage of international law journals published outside the United States is minimal.

WESTLAW provides complete coverage of the International Court of Justice in the form of the full text of judgments, advisory opinions, and orders beginning with the Court’s first judgment in the *Corfu Channel*

72. *Id.* at 158.

73. *Id.* at 195. Coverage begins with 1982.

74. *Id.* at 196. Coverage begins with 1982.

75. *Id.* at 198. Coverage begins with 1983.

76. *Id.* at 203. Coverage begins with 1984.

77. *Id.* at 204. Coverage begins with 1984.

78. *Id.* at 207. Coverage begins with 1989.

79. *Id.* at 215. Coverage begins with 1985.

80. *Id.* at 195.

81. *Id.* at 195–216.

82. *Id.*

case.⁸³ This database (WESTLAW calls it INT-ICJ) is a fairly good substitute for the print version and has the advantage of rapid textual search. A simple test, finding the *Nottebohm* case,⁸⁴ might be time consuming for many, since it is difficult to distinguish between the case itself and references to it. More seasoned users will probably discover that WESTLAW permits searches by "title field." A careful reading of the *Nottebohm* case showed it to be accurate. However, WESTLAW's system does not provide the kind of easy-to-use movement among various kinds of information that might be needed. For example, there is no provision for quickly viewing a portion of the Court's Statute that seems pertinent to the case under examination. WESTLAW takes up to one year from the time the Registrar of the Court releases the text of a decision to the public to make it available electronically.

WESTLAW provides significant coverage of treaties. Recently, it began to offer "USTREATIES," "which begins full-text coverage with T.I.A.S. No. 10869 (June 18, 1979) and also includes treaties not yet in the T.I.A.S. series that have been transmitted by the Secretary of State to the Congress[.]"⁸⁵ Certain recent economic treaties are given their own database identifiers. Most notable here are NAFTA and the Canada-U.S. Free Trade Agreement.⁸⁶ But there are many omissions, including most of the United Nations and virtually all of the League of Nations Treaty Series.

3. QUICKLAW

It is beyond the scope of this article to discuss commercial electronic systems used in various regions of the world. That said, one should realize that LEXIS and WESTLAW were developed in and for the United States and may be neither used nor particularly useful elsewhere. The rough equivalent in Canada to LEXIS and WESTLAW is QUICKLAW (often called QL). A treaty project that began at Queen's University, Kingston (Ontario) in 1961 is regarded as the beginning of the QL Systems. The purpose of the project was to collect and annotate all of the treaties of the British Commonwealth. Since 1967, computerized text editing has been used to add information beyond the treaty project.⁸⁷

83. *Id.* at 153. *Corfu Channel Case (U.K. v. Alb.)*, 1949 I.C.J. 4 (Apr. 9).

84. *Nottebohm Case (Liech. v. Guat.)*, 1955 I.C.J. 4 (Apr. 6).

85. PAUL ZARINS, AM. SOC'Y INT'L L., ASIL BULL. NO. 4, WHAT'S ONLINE IN INTERNATIONAL LAW: ASIL NEWSLETTER ARTICLES: 1992-1995, at 8 (1995).

86. WESTLAW, *supra* note 68, at 153-54.

87. MARGARET A. BANKS & KAREN E.H. FOTI, BANKS ON USING A LAW LIBRARY 231 (6th ed. 1994).

In 1973, QL left the university to become a commercial venture.⁸⁸ In most ways, QL is similar to LEXIS and WESTLAW with, of course, a Canadian emphasis. It seems to pay even less explicit attention to international law than either of the two dominant U.S. systems, which is ironic given its treaty origin. The study guide published by QUICKLAW describes it in this way:

QUICKLAW, the largest and most established legal and tax information service in Canada, offers a variety of bulletin boards and databases. The LAW/NET Bulletin Board contains very recent decisions of the Supreme Court of Canada. These are made available within two to three hours after their release by the Court. Important cases from other courts are posted on the LAW/NET Bulletin Board as well.⁸⁹

Like LEXIS and WESTLAW, QL excels at tracking the history of cases. If you know the name of a case, you "need only input the name in the appropriate fashion, search the appropriate databases . . . , and retrieve the collection of cases which have considered the topic."⁹⁰ Further, QL seems to do a fairly good job of providing hypertext links from cases to related material.⁹¹ The range of databases provided is comparable to LEXIS and WESTLAW, i.e., it is broad and includes most sub-federal units along with selected law reviews and journals.⁹² One difference stands out; QL does not seem to have the economic law emphasis found in U.S. systems. Economic law is not ignored, but it receives hardly any more attention than human rights.⁹³

From the standpoint of international law, QL offers no particular advantages. In fact, it lags behind WESTLAW and probably is about comparable to LEXIS. It is expensive; the officially cited rate is \$150 per hour.⁹⁴ However, it does fulfill its mission of providing what is needed by scholars and practitioners in Canada.

88. *Id.*

89. QL SYSTEMS LIMITED, QUICKLAW QUICK STUDY GUIDE 1 (1994).

90. JOHN A. YOGIS ET AL., LEGAL WRITING AND RESEARCH MANUAL 185 (4th ed. 1994).

91. BANKS & FOTI, *supra* note 87, at 232.

92. YOGIS ET AL., *supra* note 90, at 176-81.

93. *See id.* at 176. Databases are included for Charter of Rights Cases and Canadian Human Rights Decisions.

94. Letter from QL Systems Limited (May 1995) (on file with author).

4. CD-ROM⁹⁵

I shall do no more than offer some observations and examples of the huge range of materials available on CD-ROM.⁹⁶ This mode of storing information has proliferated in recent years to the point where many libraries rely on them. The amount of information that can be stored on one CD-ROM is truly amazing. For example, the *Thesaurus Linguae Graecae* "contains more than 95 percent of all archaic and classical Greek texts."⁹⁷ In the case of treaty information for the United States, commercial publishers have attempted to enhance access with products that employ CD-ROM databases. At present, there are no publicly available electronic versions of the U.N. Treaty Series texts or an index for them.

A new CD-ROM product, UNBIS Plus,⁹⁸ draws on the United Nations Bibliographic Information System and covers U.N. resolutions, voting records, and document citations, but does not deal with treaties. When it comes to CD-ROM treaty collections, most significant are the omissions. Neither of the two most widely used tools for multilateral treaty information, M.J. Bowman and D.J. Harris's *Multilateral Treaties: Index and Current Status* and the U.N.'s *Multilateral Treaties Deposited with the Secretary General*, is available in CD-ROM format. The International Labour Organisation (ILO) has been a leader in making its treaties available in CD-ROM format. ILOLEX is a trilingual (English/French/Spanish) full text database of various ILO documents, including ILO Conventions. The first edition was published in 1991;⁹⁹ a new edition, distributed by the ILO itself, was scheduled to appear in 1995.¹⁰⁰

An interesting product is Hein's *United States Treaty Index on CD-ROM*.¹⁰¹ It provides many more access points than the State Department's

95. Paul Zarins, Social Sciences Bibliographer, Stanford University, was indispensable in helping me to understand these products.

96. CD-ROM is an acronym for "compact disk read only memory," a small plastic plate about 12 cm in diameter in its most widely used format. One CD-ROM can hold enormous amounts of information, e.g., thousands of books. As the name connotes, most present systems must work with a fixed set of information that cannot be changed by the users — hence the descriptor "read only."

97. George P. Landow, *What's a Critic to Do?: Critical Theory in the Age of Hypertext*, in *HYPER/TEXT/THEORY* 1, 10 (George P. Landow ed., 1994).

98. CHADWYCK-HEALEY, *UNBIS PLUS ON CD-ROM: NEW ACCESS TO UNITED NATIONS DOCUMENTS AND PUBLICATIONS* (forthcoming 1995).

99. It was a commercial venture (Kluwer Academic Publishers) and sold for \$850.

100. The ILO has announced a price of \$300.

101. HEIN'S U.S. TREATY INDEX ON CD-ROM (Igor Kavass ed., 1993). As of January 1995, the 1993 edition was the latest available.

Treaties in Force index, including searchable title key words, additional subject headings, and date restrictions, and provides official UST and TIAS citations. A major liability has been infrequent updating. The first edition appeared in 1991; the second edition is dated 1994 but uses references to the 1993 *Treaties in Force*. Thus, since August 1994 the official printed *Treaties in Force* has been more current than the Hein index. While the Hein CD-ROM does not provide any treaty texts, it does offer links to the full-text treaty database USTREATIES on the WESTLAW online service.

Oceana also produces a CD-ROM product known as TIARA (Treaties and International Agreements Researchers' Archive)¹⁰² which differs significantly from the Hein CD-ROM index, since it provides full text of U.S. treaties from 1783 to 1993. The same database that makes up TIARA is offered through the LEXIS on-line service as the USTRTY file. The availability of the full text of 200 years of U.S. treaties should have been a notable development in the world of electronic access to treaty information. Unfortunately, for a number of reasons, TIARA on CD-ROM has not produced the positive advances anticipated by many. This product has not been readily available for critical examination and does not appear to have been widely used enough to assess its utility.¹⁰³

5. The Internet

The Internet is not a single electronic system; rather it "is an enormous computer network in which any existing network can participate. It encompasses satellites, cable, fiber, and telephone lines, and it seems to have grown exponentially."¹⁰⁴ Bill Gates believes the Internet is the

102. The cost of the TIARA CD-ROM is \$995 per year, although a local area network license for up to 5 users raises the annual cost significantly to \$3795.

103. Unlike a number of other CD-ROM publishers, Oceana has not offered TIARA on a free trial; the only option is to purchase the product and then cancel the order if not satisfied. Nor can LEXIS customers on educational accounts sample the LEXIS version of this database. Oceana's USTRTY file on LEXIS is one of a relatively small number of databases that are not available at an educational discount, presumably due to contractual arrangements between Oceana and LEXIS. According to a LEXIS information sheet, Oceana's USTRTY file and the Congressional Information Service's Legislative Histories file CISLH are the only two files in the international INTLAW library not available for educational use. LEXIS-NEXIS, MEAD DATA CENTRAL, INC., FACTS ABOUT EDUCATIONAL SUBSCRIPTIONS (1994) (as of September, 1994). The cost of using the file at regular commercial rates is extremely high; under an hourly plan the cost can be \$417 per hour and 2 cents per line of text printed or downloaded to disk. Finally, unlike some other vendors, Oceana has not offered a package whereby subscribers to the CD-ROM product would become eligible for educational use of the online database.

104. Robert E. Calem, *The Network of All Networks*, N.Y. TIMES, Dec. 6, 1992, at F12.

most important development in computing since the personal computer was introduced 15 years ago.¹⁰⁵ The Internet is global and gives scholars and researchers access to thousands of databases, many of which are free and a large number of which contain important international law information. For example, one can use the Internet to search the "online catalog of Columbia University School of Law Library with its strong collection of international and foreign law materials[,]""¹⁰⁶ and the full texts of recent U.N. resolutions.¹⁰⁷ The Internet has been described as a "network of networks."¹⁰⁸ Professor Katsh got it exactly right when he wrote "[t]he Internet is a structure that is habitable but not particularly hospitable. Yet, it has experienced extraordinary growth in spite of its user unfriendliness."¹⁰⁹ This inherent unfriendliness now is giving way as commercial on-line systems that serve the general public are emphasizing access to the Internet; the need to serve a mass audience, instead of an academic or technical one, simply demands a higher standard in ease of use.

Metaphors are valuable to ease people into new and initially intimidating intellectual domains. That may be why the expression "information superhighway" has become so popular.¹¹⁰ The Internet is the information superhighway system to which most academics in North America have free, unlimited access.¹¹¹ There are other special-use information superhighways, such as the telephone system, that work better and more predictably, but they are less versatile than the Internet.

105. GATES, *supra* note 8, at 91.

106. Paul Zarins, *What's Online in International Law*, ASIL NEWSL., Sept.-Oct., 1993, at 24, 24-25.

107. Paul Zarins, *What's Online in International Law*, ASIL NEWSL., Jan.-Feb., 1994, at 16.

108. KROL, *supra* note 51, at 509.

109. Katsh, *supra* note 11, at 439.

110. Most people attribute the term "information superhighway" to then-Senator Al Gore.

Vice President Al Gore's staff claims, without citations, that he called for a national network of *information superhighways* in the early 80's; I predicted two months ago that mouthful would be shortened to *infoway* or *I-way*, but it seems the German word *Autobahn* has provided the combining form for Gore's footprint in the sands of time.

William Safire, *On Language: Footprints on the Infobahn*, N.Y. TIMES MAG., Apr. 17, 1994, at 20; see also e-mail from Robert Metcalfe, *Infoworld*, to John King Gamble (Feb. 27, 1995) (on file with author) ("I recall hearing him [A. Gore] use the phrase long before 1991 — at a dinner speech he gave when I was on the Computer Science and Technology Board of the National Research Council").

111. It is free to the "end user" in the case of universities, principally faculty and students, but private corporations, governments, and educational institutions ultimately finance the Internet.

There are some ways in which the information superhighway is an appropriate metaphor for the Internet. It does connect millions of locations, large and small, proximate and distant, so that information can be distributed among them. There are millions of possible routes to get to the same destination on the Internet just as one can take many different routes from Montreal to Chicago. If you do not know how to drive an automobile, you are significantly disadvantaged in using a highway system. Similarly, if you do not know how to use a computer, your benefit from the information superhighway will be limited. Some people who never learned to use computers may feel like their grandparents who never learned to drive automobiles. Use of the Internet has increased so rapidly that users feel it is a four-lane road where a twelve-lane highway is needed to deal with congestion.

But there are myriad ways in which the Internet is nothing like a modern superhighway. Since one travels the Internet at the speed of light, it matters little what route you take to your electronic destination.¹¹² The Internet's guiding principle of free and open access to everyone produces an almost unimaginably large range of destinations, many of which are of low quality. Even worse, many "stops" on the information superhighway are not stops at all, but someone's idea of where a stop might be if someone gets around to building one. Probably because of the relative youth of the Internet, it is being used simultaneously by primitive and advanced computers. It is like a highway where racecars, huge trucks, bicycles, skateboards and automobiles are all vying for access at the same time. Bill Gates found the metaphor wanting principally because it "emphasizes the infrastructure of the endeavor rather than its applications[,] and prefers to call it the "ultimate market."¹¹³

My experience with the Internet probably is typical. I began using it for electronic mail (e-mail) to communicate, for free, with colleagues around the world. For many international law experts, e-mail was the first exposure to the Internet. Next, I began to find documents and other information using gophers. There was a lot there, but the quality was very uneven and I most easily could find those things I needed least, that is, material with which I already was very familiar. Ironically, finding materials on the Internet may suffer from the same shortcoming

112. Bill Gates wrote that "[i]n fact, one of the most remarkable aspects of this new communications technology is that it will eliminate distance. It won't matter if someone you're contacting is in the next room or on another continent." GATES, *supra* note 8, at 6.

113. *Id.*

of international law itself, working best when needed least. About a year later, I started joining users' groups which have tremendous potential to deliver information but also produce information overload.

6. Discussion Groups, e.g., INT-LAW

The availability of e-mail via the Internet spawned hundreds of electronic discussion groups for scholars with common interests. The oldest and most significant group for international law is INT-LAW,¹¹⁴ co-founded by Lyonette Louis-Jacques and Milagros Rush at the University of Minnesota on 30 April 1991 to serve as an electronic forum for discussions of issues and topics related to foreign, comparative, and international legal resources and librarianship.¹¹⁵ Although INT-LAW was begun by law librarians, its membership certainly is not limited to them.¹¹⁶ Recently, INT-LAW reported a total of 988 subscribers distributed as shown below:¹¹⁷

Australia	83	Iceland	2	Portugal	1
Austria	12	Ireland	3	Russia	2
Belgium	9	Israel	6	Slovenia	1
Brazil	3	Italy	13	South Africa	3
Canada	50	Japan	9	Spain	11
Croatia	1	Lithuania	1	Sweden	6
Czech Rep.	1	Malaysia	1	Switzerland	6
Denmark	2	Mexico	5	Taiwan	1
Estonia	1	Netherlands	26	U.K.	40
Finland	2	New Zealand	9	U.S.A.	571
France	3	Norway	4	Venezuela	1
Germany	38	Philippines	1	unknown	39
Hong Kong	5	Poland	1		

The implication of getting advice from hundreds of colleagues in a matter of hours is exciting and a bit daunting. Often it works very well.

114. To subscribe to the INT-LAW discussion group, which is archived at the University of Minnesota, send an e-mail message containing only the words "sub int-law" followed by your name, to listserv@vm1.spcs.umn.edu. See also *Tile.Net/Lists: INT-LAW*, available online at URL <http://tile.net/lists/intlaw.html> (providing instructions for subscribing to INT-LAW).

115. E-mail from Lyonette Louis-Jacques, University of Minnesota, to new INT-LAW members (received Mar. 6, 1994) ("Welcome to new INT-LAW members") (on file with author).

116. *Id.*

117. E-mail from Lyonette Louis-Jacques, University of Chicago, to INT-LAW discussion group (Dec. 29, 1995) (on file with author).

INT-LAW already shows signs of broadening its focus; tables of contents of the *American Journal of International Law* and of *International Legal Materials* are available on INT-LAW weeks before they arrive in the mailboxes of subscribers. The Canadian seizure of a Spanish fishing vessel in March 1995 provided a fascinating glimpse of the potential of INT-LAW, when a lively discussion of the international legal issues began almost immediately and, while not all participants were experts on the law of the sea, the resulting debate was academically rigorous and very interesting.¹¹⁸

Probably this first international law-oriented group was begun by librarians because they were more comfortable with computer networks and perhaps because discrete, technical questions are well suited to the e-mail milieu. The American Society of International Law is considering beginning a users' group that presumably would be a more broadly focused electronic forum on international law issues.¹¹⁹ If a group is begun, it would raise many interesting issues. Would such a group augment or replace more traditional media such as the *ASIL Newsletter*? What about an electronic version of the *American Journal's* agora?

There has been a proliferation of users' groups in the last few years. They are easy and inexpensive to establish, so that any subfield, regardless of how narrowly focused, can have its own users' group. To take a not too far-fetched example, there may soon be a users' group on alternative methods of dispute settlement under most favored nation treatment treaties. A group of experts in this sub-subfield could communicate among themselves, overcoming their frustration at having no one to talk to at their home institution. But the existence of such a group might increase the isolation of this subgroup. Members of the group may have less need to reach out to other international law scholars and to explain their subspecialty to the broader profession. They may drop out of professional associations whose conferences and journals devote almost no attention to alternative methods of dispute settlement under M.F.N. treaties. Global interconnectivity may increase fragmentation and isolation.

7. Multilaterals Project

Another resource available on the Internet is the Multilaterals Project, conceived and developed by Peter Stott, a graduate student at the Fletcher School of Law and Diplomacy. The project has been undertak-

118. However, during the nine-month period, April–December, 1995, there were no other discussions of substantive international law issues that even approached the depth and rigor of the Canadian/Spanish issue — perhaps this was an isolated event.

119. This is an item being discussed by the Society's Committee on Electronic Technologies, which I chair.

en with very few resources. Nonetheless, many people rely on it and use it regularly. If we could measure the cost effectiveness of international law information systems, Stott's effort would win hands down. Mr. Stott describes the motivation behind the project:

The texts of international treaties are not widely available to the general public outside specialized law libraries, schools of international affairs, and expensive data services. . . . The Multilaterals Project, a hitherto unfunded experiment initiated by a graduate student at the Fletcher School of Law and Diplomacy, was designed to address this need and to make available on the "Internet" the full texts of a wide variety of these international instruments.¹²⁰

When one uses the project's database, Mr. Stott points out that "approximately 200 treaties and other international instruments are maintained as digital text files."¹²¹ Stott appears to be expanding the list of treaties and the sophistication of ways it can be searched. The text is now available through the World Wide Web.¹²² When one "visits"¹²³ the project on the Internet, he/she sees a set of categories:

Atmosphere and Space	Marine and Coastal
Flora and Fauna-Biodiversity	Other Environmental
Cultural Protection	Trade and Commercial Relations
Diplomatic Relations	Rules of Warfare; Arms Control
General	Gulf Area Borders
Human Rights ¹²⁴	

There is also a chronological index based on the date the treaty was signed. It is possible to search all of the treaties for words or phrases. Most users probably would wish to scroll through the extensive list of treaties, which begins with the Pacific Settlement of International Disputes (July 29, 1899) and includes approximately 162 treaties.¹²⁵ The

120. PETER H. STOTT, FLETCHER SCHOOL OF LAW AND DIPLOMACY, MULTILATERALS PROJECT: PROPOSAL CONCEPT (1994) (on file with author).

121. E-mail from Peter H. Stott, Fletcher School of Law & Diplomacy, to John King Gamble (Feb. 11, 1995) (on file with author).

122. *Multilaterals Project*, available online at URL <<http://www.tufts.edu/fletcher/multilaterals.html>>.

123. The information provided in this article describes the site as it appeared on Feb. 7, 1996.

124. *Multilaterals Project*, *supra* note 122.

125. *Multilaterals Project Chronological Index*, available online at URL <<http://www.tufts.edu/departments/fletcher/multi/chrono.html>> (accessible by clicking on "Chronological Listing" in *Multilaterals Project*, *supra* note 122). Older documents, beginning with the Treaty of Westphalia (Oct. 24, 1648), are available under *Miscellaneous Historical Documents*, available online at URL <<http://www.tufts.edu/departments/fletcher/multi/histori>>.

exact number of instruments included depends on one's definition, e.g., does a convention and a subsequent protocol count as one or two items in the database? Overall, the Stott list appears comprehensive, and the treaties seem to be very accurate. The principal drawback is that Stott provides only a snapshot of the treaty, usually at the time it was signed, and does not attempt to include a comprehensive, up-to-date list of signatories, ratifications, accessions, reservations, etc. Recently, Mr. Stott has included hypertextual links to other versions of treaties and to provide supplemental information about some of the instruments.¹²⁶ This approach makes the project more versatile and useful, but at some risk to quality and consistency. Mr. Stott's project is successful (and widely used) because it was carefully developed by someone for whom international law is a principal interest, not a sideline.

C. Hypertext

I believe that in the immediate future, and no one but a fool would attempt prediction beyond the immediate future where computers are concerned, the greatest potential impact on teaching and research in international law falls under the general rubric of what is commonly called hypertext. Like Molière's character,¹²⁷ those who use or write about international law not only employ, but rely on, hypertext. An extended footnote is nothing more than a rudimentary form of hypertext. The idea behind hypertext is traced to Vannevar Bush's article in the *Atlantic Monthly* of 1945 in which he envisioned an automated way for sorting, retrieving and linking information as a way to deal with the information explosion.¹²⁸ The term hypertext was coined almost 30 years ago by Theodor H. Nelson to connote "a form of electronic text, a radically new information technology, and a mode of publication."¹²⁹ Nelson described it this way, "[B]y 'hypertext'. . . I mean *nonsequential*

the Treaty of Westphalia (Oct. 24, 1648), are available under *Miscellaneous Historical Documents*, available online at URL <<http://www.tufts.edu/departments/fletcher/multi/historical.html>> (accessible by clicking on "Historical Documents" in *Multilaterals Project*, *supra* note 122).

126. Based on information from a "visit" of Jan. 1, 1996.

127. JEAN-BAPTISTE POQUELIN MOLIÈRE, *LE BOURGEOIS GENTILHOMME* acte II, scène IV (Librairie Hachette 1965) (1670) ("[I]l y à plus de quarante ans que je dis de la prose sans que j'en susse rien, et je vous suis le plus obligé du monde de m'avoir appris celà.")

128. Espen J. Aarseth, *Nonlinearity and Literary Theory*, in *HYPER/TEXT/THEORY*, *supra* note 97, at 51, 68 (citing Vannevar Bush, *As We May Think*, *ATLANTIC MONTHLY*, July 1945, at 101).

129. GEORGE P. LANDOW, *HYPERTEXT: THE CONVERGENCE OF CONTEMPORARY CRITICAL THEORY AND TECHNOLOGY* 4 (1992).

writing — text that branches and allows choices to the reader, best read at an interactive screen. As popularly conceived, this is a series of text chunks connected by links which offer the reader different pathways.”¹³⁰

Professor George Landow emphasized that hypertext consists “of individual blocks of text, or lexias, and the electronic links that join them[.]”¹³¹ Some believe that hypertext has been oversold, so much so that leading authority Norman Meyrowitz entitled one of his speeches, *Hypertext — Does It Reduce Cholesterol, Too?*¹³²

More important, I believe, is the fact that hypertext may be the first widely used computer application that shows the power and versatility of the electronic era. Most scholars were introduced to computers with word processing which created a widespread underestimation of the impact of these new technologies.

The word processor has served to familiarize the literary scholar with *some* aspects of the new text technologies; but, due to its collaborative and emulative nature (the way electronic word processing assumes the goals of the earlier technologies), the more radical potential of textual computing is easily ignored, and the computer is gratefully perceived as less threatening than it actually is.¹³³

Hypertext is much more than a very convenient, faster way of doing things. Rather, it permits a radically different approach to written material.¹³⁴ International law, like most areas of scholarly inquiry, has been shaped by a rigid, inflexible mode of presenting information. In a sense, we have been thoroughly conditioned, perhaps “brainwashed,” into this mode because we were taught with it, conducted research using it, employed it when we became teachers, judges, or practitioners and published the results of our own research using the same mode. Professor Landow described the situation this way:

Since the invention of writing and printing, information technology has concentrated on the problem of creating and then disseminating static, unchanging records of language. As countless authors since the inception of writing have proclaimed, such fixed records conquer time and space, however temporarily, for they permit one

130. *Id.*; THEODOR H. NELSON, LITERARY MACHINES at 0/2 (1981).

131. Landow, *supra* note 97, at 1.

132. *Id.* at 7.

133. Aarseth, *supra* note 128, at 52.

134. Katsh, *supra* note 11, at 443.

person to share data with people in other times and places. Printing adds the absolutely crucial element of multiple copies of the same text; this multiplicity, which preserves a text by dispersing individual copies of it, permits readers separated in time and space to refer to the same information.¹³⁵

Landow envisioned change not seen for centuries, change that “promises (or threatens) to produce effects on our culture, particularly on our literature, education, criticism, and scholarship, just as radical as those produced by Gutenberg’s movable type.”¹³⁶ Limiting oneself strictly to textual material seems excessively rigid. Others have argued for the broader term “paratext”:

We live in an era of “paratexts,” in which words and images, as captured by electronic recording, compete with print to represent legally significant events. In using the term “paratexts,” we intend to convey two essential ideas. First, we imply a meaning of “text” that extends beyond (“para”) its conventional understanding, which is typically limited to written or printed documents. . . . [T]he term could apply to any electronic form of transmission — such as telephone, radio, film, television, photocopying machine, facsimile (“fax”), computer, laserdisk, compact disk-read only memory (“CD-ROM”)[.]¹³⁷

Since international law will continue to be dominated by textual information, I shall use the term “hypertext” but shall use it broadly enough to include media other than text. The following example and diagram of how hypertext might be applied to international law illustrate the power of the technique. Treaties, as the principal source of modern international law, are studied by every scholar of the subject. Consider the case of the 1958 Geneva Convention on the Continental Shelf.¹³⁸ How might a professor or foreign ministry official wish to study this instrument? The answer, of course, is that there is an almost infinite variety in what the “user” might seek from the treaty. Most of those studying this treaty would want to be able to see a list of all parties including dates when they signed and ratified or acceded to the Convention. Further, an instantly available list of parties could indicate, perhaps

135. LANDOW, *supra* note 129, at 18.

136. *Id.* at 19.

137. Ronald K.L. Collins & David M. Skover, *Paratexts*, 44 STAN. L. REV. 510 (1992).

138. Convention on the Continental Shelf, Apr. 29, 1958, 15 U.S.T. 471, 499 U.N.T.S. 311 (entered into force 10 June 1964).

with a different color,¹³⁹ those states that had made declarations or reservations upon signature, ratification, or accession.

Assume that an official from the French foreign ministry was interested in this treaty. The document could be configured to reflect the status of the French Republic *vis-à-vis* the treaty showing that the treaty entered into force for France by accession dated June 14, 1965.¹⁴⁰ But France attached a number of rather complex declarations and reservations to its accession. Hypertext could be used to make this information instantly available. This could be accomplished with a color-coding system to show provisions of the treaty in respect of which France had offered a declaration, reservation, or had objected to the reservation of another state. Article 2, paragraph 4 of the Convention reads:

The natural resources referred to in these articles consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.¹⁴¹

This portion of the article might be highlighted in yellow indicating the French declaration. If one selected (clicked on the yellow-highlighted article), he/she would immediately see the exact text of the French declaration which reads, "In the view of the Government of the French Republic, the expression 'adjacent' areas implies a notion of geophysical, geological and geographical dependence which *ipso facto* rules out an unlimited extension of the continental shelf."¹⁴²

In similar fashion, Article 5, paragraph 1 might be highlighted in red, indicative of the fact that France had lengthy reservations to that clause.¹⁴³ Blue might be used to highlight Article 4 to show that France objected to the reservations made by other states. In this instance, clicking on Article 4 would show the French objection, "The Government of the French Republic does not accept the reservations made by the Government of Iran with respect to article 4 of the Convention."¹⁴⁴ One

139. Using color on a screen offers the advantage of identifying a particular portion or passage very quickly. However, this might present problems for color-blind users.

140. *Multilateral Treaties Deposited with the Secretary-General: Status as of 31 December 1993*, at 794, U.N. Doc. ST/LEG/SER.E/12, U.N. Sales No. E.94.V.11 (1994).

141. Convention on the Continental Shelf, *supra* note 138, art. 2(4).

142. *Multilateral Treaties Deposited with the Secretary-General: Status as of 31 December 1993*, *supra* note 140, at 795.

143. *Id.*

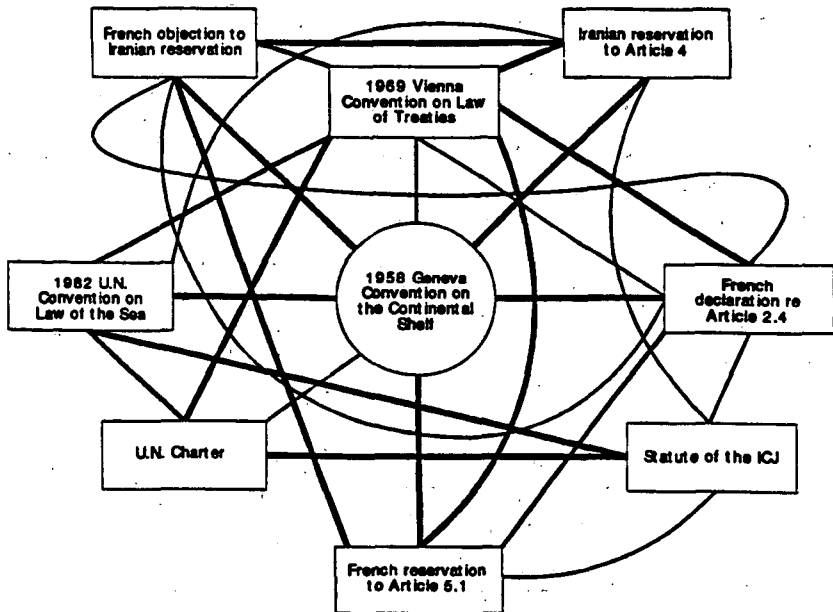
144. *Id.* at 796.

could follow the hypertextual trail, as it were, and view the text of the Iranian reservation to which France objected, "With respect to the phrase 'the Coastal State may not impede the laying or maintenance of submarine cables or pipe-lines on the continental shelf', the Iranian Government reserves its right to allow or not to allow the laying or maintenance of submarine cables or pipe-lines on its continental shelf."¹⁴⁵

This illustration shows the power of hypertext. It would make it significantly easier to grasp the subtleties of a treaty and to change the perspective instantly. For example, the treaty would be presented very differently if viewed by an official from the U.S. Department of State.¹⁴⁶

Figure 1
Possible Hypertextual Links

———— Probable links
 ——— Secondary links



145. *Id.* at 795.

146. The United States had no reservations, but did object to those offered by Iran, Germany (FRG), France, and Canada. *Id.* at 796-97.

Figure 1 is a graphic illustration of the above hypertextual links along with a few other links that certainly would be available in any electronic collection of important treaties.¹⁴⁷ It is assumed that the user begins with the Continental Shelf Convention, shown at the center of the diagram. From this point, there are a number of probable links (shown by broader lines) and a number of secondary links (shown by thinner lines). This is a very simple example, yet it quickly becomes blurringly confusing! This illustrates both the advantages and dangers of hypertextual systems. One can "travel" instantly from one kind of information to another, e.g., from the text of the 1958 Convention, to the Iranian reservation to Article 4, to the French objection to that reservation, to the Vienna Convention on the Law of Treaties, to check the definition of a reservation.¹⁴⁸ There is almost an infinite number of ways in which the information might be viewed.

If treaties were available in a hypertextual format like that envisioned here, it could be a boon for teaching and scholarship in international law. But students and, for that matter, many other users, might be so enamored with the hypertextual links that they would not bother to read through the entire treaty. Such problems could be handled with intelligent planning by those creating the computer software. In this example, if the instructor were trying to teach aspects of international law contained in the 1958 Continental Shelf Convention, the pedagogic software could be designed to require that users spend a certain amount of time looking only at the text of the Convention and/or at least scrolling through all of it before taking hypertextual journeys to other documents. It is important to understand that a hypertextual environment is an entirely new mode with markedly different rules:

Hypertext fragments, disperses, or atomizes text in two related ways. First, by removing the linearity of print, it frees the individual passages from one ordering principle — sequence — and threatens to transform the text into chaos. Second, hypertext destroys the notion of a fixed unitary text. Considering the "entire" text in relation to its component parts produces the first form of fragmentation; considering it in relation to its variant readings and versions produces the second.¹⁴⁹

147. If the electronic system contained information beyond treaties, e.g., ICJ cases, many other links would be required, quickly making display impossible on a single, two-dimensional page.

148. Vienna Convention on the Law of Treaties, *supra* note 62.

149. LANDOW, *supra* note 129, at 54.

“Hypertext systems, just like printed books, dramatically change the roles of student, teacher, assignment, evaluation, reading list, as well as relations among individual instructors, courses, departments, and disciplines.”¹⁵⁰

Hypertext can be confusing because it is a technique for handling information, the significance of which has changed dramatically, as technology develops faster, more sophisticated ways to make use of the technique. The most primitive form of hypertext, the footnote, is convenient and important, but it followed naturally, almost unnoticed, from a regular presentation of text. Many earlier modes for the electronic delivery of hypertext were slow and cumbersome. A recent development in hypertext, called the World Wide Web (or WWW or simply the Web), already is revolutionizing hypertext.¹⁵¹ Writing for *The Wall Street Journal*, Walter Mossberg described the Web this way:

The Web is made up of millions of “pages,” which are nothing more than small collections of text, pictures and graphics, and usually references to other pages containing related material. A “Web site” may contain many such pages. A “home page” is the page at each site which serves as a kind of book cover or table of contents to organize and introduce the other pages and material at that site.¹⁵²

The Web, although developed initially by scientists at the European Particle Physics Laboratory,¹⁵³ is being used extensively by virtually all scholarly disciplines including international law. The Web “is an attempt to organize all the information on the Internet, plus whatever local information you want, as a set of hypertext documents.”¹⁵⁴ At its best, the Web provides instant, intuitive hypertextual links, and it will work on most computers with graphical interfaces, assuming, of course, presence of software and hardware to connect to the Internet. Few recent the developments in computer technology have received praise like that heaped on the Web or have been adopted so quickly. Peter Lewis, writing in *The New York Times*, said:

150. *Id.* at 163.

151. John Markoff stated that “the Web has reached this threshold through a confluence of a key technology, a ready audience and a stream of corporate backers[.]” John Markoff, *If Medium Is the Message, the Message Is the Web*, N.Y. TIMES, Nov. 20, 1995, at A1, D5.

152. Walter S. Mossberg, *Getting to Know the ABCs of the WWW to Dazzle Friends*, WALL ST. J., Jan. 4, 1996, at B1. Mossberg does an excellent job of explaining the Web so that even those with no computer experience can understand.

153. KROL, *supra* note 51, at 287.

154. *Id.* at 289.

It is difficult to overstate the importance of the Web . . . for making the resources of the Internet available to casual users. . . .

. . . .

Before the Web became popular, finding out about [a] document, let alone getting to it across the Internet, required skills that make the Dewey Decimal System seem self-evident. The Web, in contrast, makes it relatively simple for the author of a document to forge a link between the documents (or pictures, or sound files or what have you) and embed all the necessary navigation commands invisibly in the highlighted text.¹⁵⁵

The significance for international law is that the World Wide Web, or its grandchild, promises to make it much easier to take advantage of the power of hypertext with instant, automatic¹⁵⁶ linkages to other international law information anywhere in the world. I believe too much attention has been lavished on the Web itself, obscuring the fact that the Web is the first mass-produced model, rather like the Model-T Ford, of a product that will develop rapidly and change the world.

II. FUNDAMENTAL CHANGES TO INTERNATIONAL LAW

In the next decade, the information age will bring about fundamental changes to most institutions that deal with international law. For example, the International Court of Justice might permit parties to disputes to appear via satellite, eliminating the time and expense of travel to the Hague. Perhaps a new kind of chamber using the Internet or teleconferencing will permit a degree of speed otherwise impossible. How will the Court deal with computerized information used in oral pleadings,¹⁵⁷ but unavailable in the usual blackletter law sense once the pleadings are completed? Instead of dealing with changes to specific institutions such as the World Court, I shall take a broader approach and examine ways in which the information age can be expected to have a significant impact on the foundations of international law.

155. Peter H. Lewis, *Making It Easier to Enter the Web*, N.Y. TIMES, Jan. 24, 1995, at C8.

156. Of course, it is "automatic" only if someone has exercised great care in designing the Web site in the first place; often this is not the case.

157. This has already occurred before an arbitral panel. See *Court of Arbitration for the Delimitation of Maritime Areas Between Canada and France: Decision in Case Concerning Delimitation of Maritime Areas*, 31 I.L.M. 1145 (1992).

A. Sources of International Law

The new information age has the potential to produce the most fundamental change in the sources of international law at least since that nodal point of about 1918 when convention overtook custom as international law's principal source.¹⁵⁸ I am not forecasting the emergence of new sources, at least not initially. However, the way in which the sources will be identified and understood may change so radically that it will be difficult to distinguish one source from another.

The four sources of international law taught in every course in public international law are:

- (a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
- (b) international custom, as evidence of a general practice accepted as law;
- (c) the general principles of law recognized by civilized nations; and
- (d) subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.¹⁵⁹

The relevance of the new technologies to sources was anticipated in the work of Professor Schachter:

The principal intellectual instrument in the last century for providing objective standards of legal validation has been the doctrine of sources. That doctrine which became dominant in the nineteenth century and continues to prevail today lays down verifiable conditions for ascertaining and validating legal prescriptions. The conditions are the observable manifestations of the "wills" of States as revealed in the *processes* by which norms are formed — namely, treaty and State practice accepted as law.¹⁶⁰

He saw a direct link between sources and an inductive approach to international law that provided "methods for ascertaining and validating law."¹⁶¹ Schachter continues:

158. See ANTHONY D'AMATO, *THE CONCEPT OF CUSTOM IN INTERNATIONAL LAW* (1971); Maarten Bos, *Will and Order in the Nation-State System: Observations on Positivism and International Law*, in *THE STRUCTURE AND PROCESS OF INTERNATIONAL LAW: ESSAYS IN LEGAL PHILOSOPHY DOCTRINE AND THEORY* 51 (Ronald St.J. Macdonald & Douglas M. Johnston eds., 1983).

159. STATUTE OF THE INTERNATIONAL COURT OF JUSTICE art. 38(1).

160. OSCAR SCHACHTER, *INTERNATIONAL LAW IN THEORY AND PRACTICE* 35 (1991).

161. *Id.* at 36.

If sources were to be used objectively and scientifically, it was necessary to examine in full detail the practice and related legal convictions (*opinio juris*) of States. Most of the major treatises in international law purported to follow this methodology though they varied considerably in their fidelity to the ideal of positivist doctrine.¹⁶²

The information age has significant potential to facilitate this more scientific, rigorous application of the doctrine of sources.

In one sense, treaties are the least troublesome of the major sources since they do not "in theory require that kind of objective validation; they [speak] for themselves."¹⁶³ But there are tens of thousands of treaties, so understanding complicated instruments and appreciating the aggregate effect of so many complex obligations can be mind boggling. Information systems on the horizon today will permit instant access, in a hypertextual format like that discussed previously, to the full text of many of the 50,000 treaties of recorded history. It will be possible instantly to find the obligations in force at a given point in time for any state. This quantum increase in information about treaties might enable them to become examples of customary behavior. If 180 states frame their extradition treaties in the same way, might we be able to argue for a customary law because of the convergence of so many treaties? This would, of course, reverse the normally assumed sequence where customary law developed over decades or centuries eventually to be codified.¹⁶⁴ A recurring problem with international custom has been consistency of behavior and discovering what objections have been offered to a crystallizing rule of customary law.¹⁶⁵ Often the behavior (state practice) examined reflected the views of governments as published in their digests of state practice:

Since only a few countries produced such digests, the data in the digests fell far short of representing State practice in general. But as it was very hard to obtain evidence of practice in the absence of the digests, those that were produced were much relied upon and often treated as highly persuasive evidence of customary law.¹⁶⁶

162. *Id.*

163. *Id.* at 37.

164. See ROSALYN HIGGINS, PROBLEMS AND PROCESS: INTERNATIONAL LAW AND HOW WE USE IT 28-32 (1994); John K. Gamble, *The Treaty/Custom Dichotomy: An Overview*, 16 TEX. INT'L L.J., 305 (1981).

165. See *Paquete Habana*, 175 U.S. 677 (1900); *North Sea Continental Shelf* (F.R.G. v. Den., F.R.G. v. Neth.), 1969 I.C.J. 3 (Feb. 20).

166. SCHACHTER, *supra* note 160, at 36 (footnote omitted).

The situation described by Schachter can be expected to improve considerably as it becomes possible to find state actions and official pronouncements with unimaginable speed and precision. We will know if a state has spoken out against a particular behavior and soon will be able to search all statements made at the United Nations and at meetings of all U.N. specialized agencies and conferences. The same principle applies at the domestic level where the full text of legislative debates soon will be available on the Internet. It will be possible to complete an exhaustive search of the national legislation and judicial decisions of most states in a matter of minutes in order to assess the consistency of behavior and sense of obligation required for customary international law.

From the time of Zouche and Vattel, it has been difficult to assess the fourth source of international law in large measure because there are so many authoritative books and articles and so much judicial activity. Soon this will change as we have instant access, for example, to most international law journals in the world. Thus we will be able to make an accurate assessment of the degree of consensus among scholars and jurists who have written on a subject. This might permit greater use of the fourth source, although Judge Lauterpacht believed it would be highly unusual "to establish the existence of a unanimous or practically unanimous interpretation[.]"¹⁶⁷

B. *Multilateral Negotiations*

Much conventional international law in the last half century has emerged from large multilateral conferences. The most difficult and complex of these conferences was the Third United Nations Conference on the Law of the Sea (UNCLOS III). Since UNCLOS III was so complicated and protracted, it is a good example to illustrate how the advances of the information age might affect large treaty-creating conferences.

There are two theoretically distinct aspects to UNCLOS III: its extraordinary length and organizational complexity on the one hand and substantive issues on the other. In some ways, what most set the conference apart was its sheer length. UNCLOS III itself lasted a decade; if one traces its origin to the 1969 U.N. Sea-Bed Committee, in many ways the logical place to begin in terms of negotiation dynamism and major participants, the conference lasted fifteen years. If the technology

167. HERSCH LAUTERPACHT, *THE DEVELOPMENT OF INTERNATIONAL LAW BY THE INTERNATIONAL COURT* 24 (1958).

of the mid-1990s had permitted the Conference to complete its work in ten instead of fifteen years, would things have been different? Would the Convention's tortuous path toward entry into force¹⁶⁸ have been different if it had been opened for signature in 1977 instead of 1982?

Professor Buzan felt that "slowness was one of the factors undermining commitment both directly and indirectly in that it provided time and incentive for unilateral action by states."¹⁶⁹ Most participants "operated on the perception that the Conference would take only a few years to complete its work, at most through 1976."¹⁷⁰ As the Conference wore on, the chances of major problems increased. Professor Miles described "a clear bifurcation between interest politics and symbolic politics" developing after 1974.¹⁷¹ "As time lengthened, the Conference became increasingly hostage to chance events, e.g., changes in governments, deaths, and internal conflicts within the US delegation."¹⁷² There were "human" consequences from such a long conference. The delegates were subject to the strain of being away from friends and family, living in a strange country in an artificial environment, and having to do so for weeks or months at a time.¹⁷³ These long sessions also helped to create a climate where "the Conference became increasingly removed from the reality of the external world it was supposed to regulate[.]"¹⁷⁴ The Conference seemed like a "closed social system," in many ways oblivious to the external world and not aware enough of realities that needed to be accommodated.¹⁷⁵

There are several ways in which the technology of the information age might have accelerated the Conference's work and produced a more positive outcome. One of the most novel aspects of UNCLOS III was its attempt to reach decisions by consensus succinctly described by Professor Charney:

The consensus system assures that decision-making at a multilateral negotiation of a convention will not be dominated by the numerical

168. The 1982 U.N. Convention on the Law of the Sea entered into force on Nov. 16, 1994, almost twelve years after it was opened for signature. See UNITED NATIONS OFF. LEGAL AFF., LAW OF THE SEA BULLETIN NO. 25, at 1 (1994).

169. BARRY BUZAN, SEABED POLITICS 281 (1976).

170. Edward L. Miles, *An Interpretation of the Negotiating of UNCLOS III*, in ESSAYS IN HONOUR OF WANG TIEYA 551, 554 (Ronald St.J. Macdonald ed., 1994).

171. *Id.* at 561.

172. *Id.* at 562.

173. M.C.W. Pinto, *Modern Conference Techniques: Insights from Social Psychology and Anthropology*, in THE STRUCTURE AND PROCESS OF INTERNATIONAL LAW: ESSAYS IN LEGAL PHILOSOPHY DOCTRINE AND THEORY, *supra* note 158, at 305, 310.

174. Miles, *supra* note 170, at 552.

175. Pinto, *supra* note 173, at 310.

superiority of any group of nations. Rather, procedural significance will be given to the variations in the power of nations. Since it is difficult to obtain acceptance of voting systems that overtly recognize the differences in nations' importance, the consensus approach permits the maintenance of an egalitarian procedure which in practice may assure that multilateral negotiations reflect the real geopolitical power of the participating nations.¹⁷⁶

This consensus procedure resulted in an arduous, seemingly interminable procedure of drafting and redrafting texts. The hallmark of consensus, the need to reconcile differences without the pressure of voting,¹⁷⁷ made for very slow going. One of the advantages of the information age, already quite highly developed, is the ability to display texts in many different forms, to modify passages instantly, and to see the drafting history. A modern text-processing system could have made it far easier to reach agreement on these texts. The advantages of modern text processing would have extended further because UNCLOS III worked with three major committees. Electronic, real-time document management would have made it much easier to track the activities of all committees and to facilitate the construction of the final treaty package.

Several other problems of conference diplomacy might have been ameliorated if the technologies of the 1990s had been available two decades earlier. The process of obtaining reaction, often required in a matter of hours, from foreign ministries thousands of kilometres away, is much easier today. During UNCLOS III, many smaller states felt enormous frustration at their inability to provide adequate numbers of negotiators and support staff for such a complicated conference; technology can stretch existing staff and lessen the problem of not being able to be in two places at once. The task of preparing official texts in six languages might have been eased with modern electronic systems.¹⁷⁸

Another important aspect of the conference was the highly technical nature of its subject matter. Certainly, previous treaty-drafting conferences dealt with technical subjects.¹⁷⁹ But, in the case of UNCLOS III,

176. Jonathan I. Charney, *United States Interest in a Convention on the Law of the Sea: The Case for Continued Efforts*, 11 VAND. J. TRANSNAT'L L. 39, 43 (1978). (footnote omitted).

177. Barry Buzan, *Negotiating by Consensus: Developments in Technique at the United Nations Conference on the Law of the Sea*, 75 AM. J. INT'L L. 324, 326-27 (1981).

178. Perhaps we should maintain a degree of skepticism. We should be mindful of experiences from other areas where labor-saving technology such as the fax machine, the pager, and e-mail do not seem to have produced a more orderly, less hectic life.

179. For example, the United Nations Conference for the Adoption of a Protocol on Psychotropic Substances, held in Vienna in 1971, adopted the Convention on Psychotropic Substances, Feb. 21, 1971, 1019 U.N.T.S. 175 (entered into force Aug. 16, 1976).

we find the convergence of many highly technical subjects, a decade-long conference and thousands of delegates, most of whom, at least initially, had little knowledge of the technical subjects. To cite just one example, it would have been much easier to explain problems attendant with archipelagic sea lanes passage¹⁸⁰ if the conference had a 1990s computer graphic system to illustrate sea lane configuration schemes under different legal regimes.

Could the tools of the new information age have had any influence on the inherent complexity of the issues? Might faster, more efficient negotiating processes have made things worse? "Committee I was a good example of over-negotiating, of pushing the law or trying to push the law too far in advance of practice, and that perhaps this same warning could be applied to some of these other issues."¹⁸¹ If the treaty-creating machine simply were not up to the task, improving the machine would not have helped. Professor Johnston felt that the range and type of problems confronted simply did not fit the mold of the U.N. Conference. "These 'meta-problems,' the major problems facing the world community in the late 20th century are just too large, too complex, and too controversial to be dealt with . . . Yet those, 'meta-problems' are what most 'law-making' or policy-making conferences of the U.N. system are about."¹⁸² Whether 1990s technology might have shortened UNCLOS III significantly turns on the degree to which the principal obstacles were mostly matters of process and form. Disagreements about basic goals and values would have been less affected by a more efficient, shorter conference. Additionally, it is possible that certain governments did not wish to reach agreement, at least a negotiated agreement acceptable to a wide range of states. They might have resisted more efficient conferences processes, of course, without explicitly acknowledging the fact. However, all treaty-drafting conferences begin in response to a complex set of external stimuli, stimuli that invariably change over time. If the widgets and networks of the information age can reduce the duration of conferences so that changes in these external stimuli are minimized, the probability of conference-derailing obstacles will be reduced.

180. *The Law of the Sea: Official Text of the United Nations Convention on the Law of the Sea with Annexes and Index*, at 15, 17, U.N. Sales No. E.83.V.5 (1983) (arts. 47, 53) [hereinafter *The Law of the Sea*].

181. Barry Buzan, *Commentary*, in *LAW OF THE SEA: NEGLECTED ISSUES* 503, 504 (John K. Gamble ed., 1979).

182. Douglas M. Johnston, *Commentary*, in *LAW OF THE SEA: NEGLECTED ISSUES*, *supra* note 181, at 509, 510.

C. *The Teaching of International Law*

If we accept the view offered by von Humboldt a century ago that there is "an organic link between the creation of knowledge and its transference,"¹⁸³ the effects of computers on the research, scholarship and practice of international law necessarily will have implications for teaching. In a survey I conducted several years ago for the American Society of International Law, I asked thousands of international law teachers about their experiences, successes, failures, and frustrations with teaching.¹⁸⁴ There is a feeling among the international law professorate that rewards for faculty follow research accomplishment, not teaching: "How can we improve international law teaching when for the most part faculty are hired, promoted and rewarded for excellence in research?"¹⁸⁵ Given this preoccupation with research, it may be difficult to convince faculty to consider major changes in their pedagogy. Using modern computer techniques in the classroom would be such a radical change that faculty will be unwilling to expend the effort unless the transition is convenient and the techniques clearly superior to existing approaches.¹⁸⁶

Each year those who teach the survey course in public international law feel increased frustration because they cannot do justice to all the materials that should be covered in a single-semester course. I offered the following recommendation:

International law is a vast subject, all important elements of which cannot be covered in a one-semester (or even a two-semester) course. This frustrates many teachers. We should admit the impossibility and do the best we can in one course. If more faculty would think in terms of what is the minimum knowledge every law graduate should have, we could broaden the audience for international legal education. At present, I suspect, many teachers find a one-semester survey of international law oxymoronic and retreat to the more comfortable realm of specialized seminars. Instead, I wish

183. See discussion in S. Kwiatkowski, *The Organizational Problems of Combining Teaching and Research*, 15 EUR. J. EDUC. 355 (1980).

184. GAMBLE, *supra* note 16, at 67-84.

185. *Id.* at 84.

186. At the time the survey was completed, these textbooks were most widely used in the United States: LOUIS HENKIN ET AL., *INTERNATIONAL LAW: CASES AND MATERIALS* (2d ed. 1987); JOSEPH MODESTE SWEENEY ET AL., *THE INTERNATIONAL LEGAL SYSTEM: CASES AND MATERIALS* (3d ed. 1988); BURNS H. WESTON ET AL., *INTERNATIONAL LAW AND WORLD ORDER: A PROBLEM ORIENTED CASEBOOK* (2d ed. 1990).

we believed that, if all students had a common background in sources, subjects, rights and duties, territory, etc., they would be better prepared for more rigorous seminars.¹⁸⁷

A well-organized system of international law information, including important multilateral treaties and World Court cases, would go a long way toward helping teachers to deal with the crushing feeling stemming from the need to fit more and more material into the same-sized package. The hypertextual system described earlier could be an excellent pedagogic device. One even can envision a computer-based, self-tutorial system to introduce students to public international law.

There are exciting new possibilities in teaching that just recently have become possible because of the widespread availability of the Internet. A recent experiment saw a simulated treaty negotiation with students from twenty universities from the United States, Canada, Europe, Japan and Hong Kong taking part.¹⁸⁸ Technology now available permits students in international law classes around the world to work interactively on a real-time basis. The problem, of course, is creating the framework so that faculty will see enough benefit from using new technologies to put their energies into adopting them. Those faculty who have made most extensive use of information age technologies seem to be their strongest proponents.¹⁸⁹ Beyond pedagogic worth, we must convince the professorate of the intellectual rigor and convenience of using these approaches.

Other ways in which increased availability of electronic communication can affect teaching are more subtle and often occur behind the scenes. I have had students ask me questions via e-mail to which I have been able to respond long before the next class session or office hour. Professor Jackson of Harvard Law School holds electronic office hours¹⁹⁰ and described this advantage:

[S]ome people may not feel comfortable raising an issue in class, or may not have fully worked out an idea in their minds. Yet they have very interesting things to say. Electronic communication helps tap into that. Students really considered and worked at the ques-

187. GAMBLE, *supra* note 16, at 138.

188. John K. Gamble, *Remarks by John King Gamble*, in CONTEMPORARY INTERNATIONAL LAW ISSUES: OPPORTUNITIES AT A TIME OF MOMENTOUS CHANGE 367, 368-70 (René Lefebvre ed., 1994) (noting Professor Peter Rohn's experiences using a simulation of a conference).

189. *Id.* at 369.

190. *Faculty Appointments*, HARV. L. BULL., Fall 1994, at 22, 23.

tions they e-mailed to me and often brought to bear knowledge acquired from jobs, or other courses, or as undergraduates.¹⁹¹

Professor Hall used e-mail "to publicize the voices of otherwise silent students[.]"¹⁹² She obtained very favorable results in drawing out those students who were reluctant to speak in class.¹⁹³

III. USERS' SURVEY

Any assessment of the impact of the information age on international law should examine how those in the trenches — teachers, students, practitioners — feel about, and are adapting to, these new technologies. Such important changes simply cannot be judged accurately without empirical information about attitudes and experiences. As part of the Electronic Information System for International Law/ Informatique de droit international (EISIL/IDI) project,¹⁹⁴ I distributed a questionnaire¹⁹⁵ to more than 1,000 professors and practitioners asking about their experiences with electronic methods in international law. The results of this survey give some indication of how international law scholars are adapting to these new modalities.

Those surveyed can be divided into these four groups; the number of responses from each group is indicated:

- the United States and Canada¹⁹⁶ (324)
- Europe (154)
- Industrialized Asia including Japan (40)
- Developing Countries (35)

The most basic question asked was the extent of use made of electronic search methods; three options were provided with these results:

191. *Id.*

192. Barbara W. Hall, *Using E-Mail to Enhance Class Participation*, PS: POL. SCI. & POL., Dec. 1993, at 757.

193. *Id.* at 758.

194. With the help of a planning grant from the Ford Foundation, I am assessing the feasibility of a comprehensive information system for international law.

195. Professor Peter Rohn helped greatly in the design and wording of the questionnaire. Those surveyed were drawn from membership in the American Society of International Law. While that membership is skewed toward the developed world, the relatively large size of the sample (about twenty-five percent of ASIL membership) and good return rate means that the results are relatively representative.

196. I did not assume the two countries were identical; rather I looked at responses and found almost no differences. This is consistent with the survey of international law teaching. GAMBLE, *supra* note 16, at 114-17.

TABLE 1¹⁹⁷
 EXTENT OF USE MADE OF ELECTRONIC SEARCH METHODS

	ALMOST NEVER	LIBRARY CAT- ALOGS ONLY	CATALOGS, DATA BASES, ETC.	TOTAL
U.S. & Canada	23%	9%	68%	100%
Europe	22%	27%	51%	100%
Asia	42%	11%	47%	100%
LDCs	36%	0%	64%	100%

Several things stand out from Table 1. Overall, use of more sophisticated media is below 50 percent only for the Asia subset. In the U.S. and Canada, it stands at 68 percent. This seems somewhat incongruous in light of widespread frustration expressed in the open-ended part of the questionnaire by users who feel they cannot keep up with what is available and must rely on the assistance of others. In fact, the dominant sentiment was that users must employ these new and soon-to-be indispensable systems, but feel they are ineffective at doing so. The LDC subgroup is especially interesting. Use of advanced techniques was quite high (64 percent), but none of them limited their use to electronic card catalogs, the mode that introduced most people in the Canada, Europe, and the United States to electronic methods. They probably adopted new technology more quickly and found ways to gain access to the Internet.

Table 2 proves what most have assumed; there is a generational divide when it comes to using these newer techniques. About half of those receiving their first university degree in the 1950s or earlier report they make almost no use of electronic methods, whereas the figure for the 1980s cohort is only 10 percent.

197. In interpreting Table 1, one should remember the nature of the sample. I used American Society of International Law membership, which introduced a certain bias in favor of affluence and the English language. It is expensive for someone in the Third World to join the ASIL.

TABLE 2
 EXTENT OF USE MADE OF ELECTRONIC SEARCH METHODS ACCORDING TO
 DECADE WHEN FIRST UNIVERSITY DEGREE WAS RECEIVED

	ALMOST NEVER	LIBRARY CATALOGS ONLY	CATALOGS, DATABASES, ETC.	TOTAL
before 1950	44%	31%	25%	100%
1950s	54%	12%	34%	100%
1960s	19%	21%	60%	100%
1970s	22%	12%	66%	100%
1980s	10%	4%	86%	100%

The questionnaire asked which materials would be most important to have available electronically and how users would address a number of trade-offs necessitated by limited resources. The questionnaire limited respondents to six choices (most followed the directions). Thus the figures in Table 3 reflect scarce resources; respondents could not assign a high priority to everything. There is a strong preference in favor of U.N.-related materials and much less interest in historical documents. Most surprising to me is the relatively low figure (32 percent) for treaties not found in the U.N. Treaty Series. Probably many respondents did not realize that a significant portion of treaties never appear in the U.N.T.S.

TABLE 3
 PRIORITIES FOR INTERNATIONAL LAW DOCUMENTS
 (PERCENTAGE INDICATING A HIGH PRIORITY)

ICJ decisions 72%	European Union, specify 28%
Post-1945 multilateral treaties 68%	Arbitrations, specify 21%
UN Security Council 60%	Pre-1945 treaties 11%
UN General Assembly 49%	PCIJ 11%
Int'l Law Commission 47%	ICJ other, specify 10%
Post-1945 bilateral treaties 36%	League of Nations, specify 4%
Treaties <i>not</i> in U.N. Treaty Series 32%	

Table 4 shows responses to a group of five questions that asked for preferences with respect to a number of trade-offs that may be necessary as electronic systems develop further in a climate of limited resources. Most viewed 1945 as the best starting point and do not generally feel it would be worth the extra effort to include materials from the League of Nations. There is a very strong preference for including the full text of documents even if this reduces the number of documents. Of course, this assumes agreement can be reached on which documents to include.

The language question (see middle of Table 4) is complex. This sample, drawn from American Society members, is skewed toward the English language. Additionally, preference for English over French is strong in Asia,¹⁹⁸ which was well represented among respondents. Even with this pro-English bias, 30% favor a bilingual, English/French approach. This may reflect a desire to redress an imbalance created by the fact that most existing large systems ignore the French language. There was very little preference for maximizing languages (only 13% overall) even among those whose native language was neither English nor French. A strong preference seems to exist for remote access. Users want a terminal in their office or home rather than having to go to a library or computer center. Most users are willing to sacrifice speed and sophistication in order to have the convenience of remote access.

The final question in Table 4 asked about the trade-off between quick and frequent updates on the one hand and breadth and depth of coverage on the other. Results here are equivocal. Respondents seem to want both. Of course, responses to earlier questions suggest ways to limit the number of documents enough to have broad/deep coverage together with a good system for up-dates.

These figures tend to mask what came through very clearly in the written comments offered, to wit, a palpable disquiet among respondents. Virtually everyone believed these electronic systems are here to stay and must be used, but most acknowledged they do not feel up to the task. Asked about how electronic systems could be used for teaching and research, most admitted they did not have any ideas. Those offering suggestions usually viewed these new systems as mere extensions of existing print media.¹⁹⁹ Most international law scholars have moved, albeit hesitantly, toward using new technologies. But they emphatically express their need for systems that are easier to use and for more effective methods to appreciate and assess the possibilities ushered in by the information age.

198. John K. Gamble & Charlotte Ku, *Choice of Language in Bilateral Treaties: Fifty Years of Changing State Practice*, 3 *IND. INT'L & COMP. L. REV.* 233 (1993).

199. *Cf.* Aarseth, *supra* note 128, at 52.

TABLE 4
TRADE-OFF PREFERENCES
(PERCENTAGE INDICATING EACH CHOICE)

Q. Including older materials vs. greater breadth and detail if scope is limited to more recent materials?

a.	b.	c.	d.
Begin with 1970	Begin with 1945	Begin with 1920	Begin with 1900
31%	56%	5%	8%

Q. Full text of documents included vs. number of documents referenced?

a.	b.	c.	d.
Full text of everything	Priority to full text	Equal emphasis	Some full text, priority given to number referenced
20%	48%	14%	18%

Q. Including materials in various languages vs. greater number of documents?

a.	b.	c.
English only	English and French	Maximize languages
57%	30%	13%

Q. Sophistication and speed of system vs. remote access?

a.	b.	c.
Willing to go to library or computer center	Some preference for office/home access	Strong preference for office/home access
24%	25%	51%

Q. Breadth and depth of coverage vs. speed and frequency of updates?

a.	b.	c.
Breadth/depth primary	Equal balance	Updates are primary
17%	51%	32%

CONCLUSIONS, PROGNOSTICATIONS, AND COUNTERPOINTS.

The effect of the information age on international law will not escape serendipity; no doubt we shall run headlong into totally unfore-

seen consequences.²⁰⁰ The very fact that most information will be displayed on a screen has important implications, such as crippling the students' ability to distinguish between sources, and disabling them from making judgments that they used to be so used to making.²⁰¹ Hypertextual systems have the potential to expand access to international law to an almost unimaginable degree. But they also can fragment learning as students no longer are confined by the traditional text; we run the risk that *no one* reads the same text.²⁰² We must assure that Thoreau's admonition, "[o]ur inventions are wont to be pretty toys, which distract our attention from serious things[.]"²⁰³ does not apply to international law.

The 1990s is a transitional period. The international law scholarly community has a short-lived opportunity to adapt to and to shape this new era. Plato, describing more widespread acquisition of the ability to write, cautioned:

[O]ne man has the ability to beget the elements of a science, but it belongs to a different person to be able to judge what measure of harm and benefit it contains for those who are going to make use of it; so now you, as the father of letters, have been led by your affection for them to describe them as having the opposite of their real effect.²⁰⁴

The information age is going to change almost everything about how international law experts seek, find, and use information. Information is the raw material of our jobs. We must be proactive to assure that technology makes our work better, more creative, and more influential. As Professor Vagts observed, the information system "seems to be sleekly efficient" until one uses it, "[b]ut it contains so much disorganized information that it threatens to overwhelm the well-equipped user."²⁰⁵ Scholars may despair at trying to use increasing volumes of electronic information and instead narrow their foci. I believe this has occurred in the law of the sea, where scholars can concentrate on the 1982 U.N.

200. One of the predictions recently offered for interactive computing over the next five years was, "There will be at least one big surprise in delivery systems." Tim Miller, *Online in 1999: Ten Predictions*, 56 INFO. TODAY, Nov. 1994, at 57.

201. Virginia Wise, *Managing Information Inflation*, in EXPERT VIEWS ON IMPROVING THE QUALITY OF LEGAL RESEARCH EDUCATION IN THE UNITED STATES 125 (1992).

202. Landow, *supra* note 97, at 34.

203. HENRY D. THOREAU, *Economy*, in WALDEN 1 (1st ed. 1854), reprinted in BARTHOLOW V. CRAWFORD, HENRY DAVID THOREAU 57, 97 (1934).

204. PLATO: PHAEDRUS 123 (C.J. Rowe ed. & trans., 2d ed. 1988).

205. Vagts, *supra* note 50, at 279.

Convention on the Law of the Sea,²⁰⁶ in the United Nations' little blue book, and largely ignore national legislation and other forms of state practice. In ten or fifteen years, when we have the benefit of hindsight on the effects of these technologies on international law, one of the dangerous consequences may have been thousands of articles and research monographs that cannot see the wood for the trees.

I am not sanguine about the effects of the new information age. Information and knowledge are not synonymous.²⁰⁷ We desperately need strategies to manage and, at times, to control or to stop completely the flow of information, lest we be frozen into inactivity. We must not become so enthralled with these new methods of *finding* information that we ignore the *analysis* of the information. The new information age is not value neutral. These "new information technologies shape the social choice mechanisms available to the communities. . . . The tools and machines we develop for thinking and communicating fashion the tasks that we identify and pursue."²⁰⁸ This has occurred already in international law where electronic information is much more complete for trade law and economic law than for environmental law or human rights law.²⁰⁹

This increased reliance on electronic systems may exacerbate the gender bias ascribed to international law if existing systems pay more attention to those aspects of international law that seem less pertinent to women's issues.²¹⁰ But some mitigation of international law's gender bias is possible if the information age produces more direct linkages between international law and the behavior of states instead of a *status quo* where "law is an autonomous entity, distinct from the society it regulates."²¹¹ An efficient, comprehensive information system for treaties would at least make gender bias more evident, e.g., that the "numerous reservations made to the Women's Convention stand in stark contrast to the four substantive reservations made to the Convention on the Elimi-

206. *The Law of the Sea*, *supra* note 181.

207. Barbara W. Hall, *Information Technology and Global Learning for Sustainable Development: Promise and Problems*, 19 *ALTERNATIVES* 99, 116 (1994).

208. *Id.* at 102.

209. Things are improving in other areas, notably Project DIANA (for human rights) and the Consortium for International Earth Science Information Network (the environment).

210. This issue is worthy of a separate article. The areas of international law of most concern to feminists are underrepresented in the large commercial databases. This raises the possibility that students of the 1990s who rely ever more on electronic media may be exposed to fewer of the newer interpretations of international law. This adds strength to the argument that international law is not gender-neutral. See Hilary Charlesworth et al., *Feminist Approaches to International Law*, 85 *AM. J. INT'L L.* 613 (1991).

211. *Id.*

nation of All Forms of Racial Discrimination.”²¹² Professors Charlesworth, Chinkin and Wright pointed out that, “The Women’s Convention, however, establishes much weaker implementation procedures than those of other human rights instruments of apparently universal applicability such as the International Convention on the Elimination of All Forms of Racial Discrimination and the Covenant on Civil and Political Rights.”²¹³ We must manage the information process, lest it distort and misrepresent international law. Law school faculty in the United States often bemoan the fact that today’s students avoid materials that are not available electronically. This means that the new generation of international law scholars and practitioners may be underexposed to certain subfields of international law and may have no exposure whatever to the classics²¹⁴ of international law or to periodical literature published before 1980.²¹⁵

There is the potential to narrow the gap between developed and developing countries. A basic electronic international law library can be put on a computer the size of a large city telephone directory for a fraction of the cost of a regular library. But computer technology is expanding so quickly that one wonders if the Third World will fall farther behind, as they have in many other aspects of development.²¹⁶ When the new century dawns, those without computers and modems will not be able to keep up. This will probably include much of the Third World.

There has been some speculation that these information age-related changes, while significant, have been overstated.²¹⁷ It is irrefutable that we cannot foresee the precise implications of changes flowing from new information technologies. It is quite another matter to say that the *amount* of change has been exaggerated. For example, Clifford Stoll, a noted popularizer of technology-related subjects, compares the information revolution to the U.S. interstate highway system when it was proposed 50 years ago.²¹⁸ But his observation falls in the category of inaccurate forecasting, not overestimation, as does his warning that “there’s

212. *Id.* at 633–34.

213. *Id.* at 632 (footnote omitted).

214. Professor Virginia A. Leary brought this issue to my attention.

215. Coverage of periodical literature in LEXIS and WESTLAW usually begins between 1980 and 1985.

216. *Cf. The Information ‘Have Nots’*, N.Y. TIMES, Sept. 5, 1995, at A12 (discussing the situation in the United States).

217. For a good “literature review,” see Steve Lohr, *The Meaning of Digital Life*, N.Y. TIMES, Apr. 24, 1995, at D1.

218. CLIFFORD STOLL, *SILICON SNAKE OIL* 3 (1995).

damned little critical discussion of the implications of an online world."²¹⁹ Stoll made an important point when he wrote, "[c]omputers hide mistakes in logic while sanctifying information with an aura of truth[.]"²²⁰ but it does not follow that we are going to be less dependent on computers, let alone use them less.

A provocative recent article dealing with law, not international law *per se*, does develop some cogent arguments why the changes might not be as far-reaching as most have assumed:

After critiquing the speculations of others, I argue that most of the writers discussing the use of legal databases have implicitly adopted an erroneous model of technological change that has led them and others to reach specious conclusions about the appropriate responses of law librarians and the legal system to the question of implementing legal databases.²²¹

Many of Mr. Pantaloni's arguments derive from comparing the computer revolution with other momentous changes such as the widespread acquisition of writing and moveable type where the amount of change was overestimated and the older modes did not die out easily, if at all:

Many characteristically oral, behavioral, linguistic, and literary stylistic habits continued long after texts were used extensively by a broad range of society. The practice of reading aloud continued after the Middle Ages. Authors of literary works wrote in a declamatory voice as if they were addressing an audience, despite the fact that written communication is more permanent. . . .

. . . .
. . . Further, it is important to note that writing has never completely supplanted oral patterns of communication in the law. Indeed, many oral discursive practices still exist in law today. Witnesses swear oaths before testifying at trial, as elected officials do before taking office. Interestingly, these oral acts are coordinated with the symbolic use of a text: an oath-taker swears with the left hand on a Bible.²²²

Jacques Ellul rejects the dominant view that everyone will be connected to a giant global network: "But who is this 'everyone'? The reference is merely to other technicians. Immigrant workers, poor farm-

219. *Id.* at 4.

220. *Id.* at 78.

221. Nazareth A.M. Pantaloni III, *Legal Databases, Legal Epistemology, and the Legal Order*, 86 L. LIBR. J. 679, 680 (1994).

222. *Id.* at 686-87 (footnotes omitted).

ers, and the young unemployed are not going to consult data banks.”²²³ Pantaloni felt that we have enough experience with databases to offer an initial evaluation of their impact. He believes “[d]atabase technology . . . has remained stable in its fundamental conception.”²²⁴ That may have been accurate five years ago, but I believe that much faster computers with far greater storage capacities coupled with widespread availability of hypertextual linkages on the Internet will produce a new era in using information. The magnitude of that change can be seen in the reaction to, and use of, the World Wide Web in comparison to Gophers of a few years ago.

Pantaloni’s bottom line, that “[t]here will be an evolutionary, not revolutionary, process of change in which electronic texts will interact with, not supplant, print[.]”²²⁵ may be true in the short run, but the short run may be over. In the longer run, the change is fundamental, across-the-board and accelerating. Most estimates are that the power of computers doubles every two years, a pace that has not slowed in this decade. The way we receive and use information is undergoing such profound change that soon it will affect the way we think about international law and, in the not-too-distant future, the building blocks of international law.

The example of treaties illustrates why the changes of the 1990s are different. New information technologies have, or soon will have, affected how treaties are negotiated, how we track state compliance with them, how our students learn about treaties, how scholars obtain current information about changing state obligations *vis-à-vis* treaties, and, ultimately, how treaties relate to the other sources of international law. Other changes touted for their system-shaking implications for international law, e.g., the increase from fifty to almost 190 states since 1945, are important, but are less pervasive and much more slowly paced.

Information technology *ipso facto* gets to the heart of law:

Other new technologies, such as nuclear power or biotechnology or medical advances, have caused a reassessment of several areas of legal doctrine. Yet, information technology is different and presents the law with a very different kind of challenge. It is different because . . . the law runs on information and because much of law *is* information.²²⁶

223. JACQUES ELLUL, THE TECHNOLOGICAL BLUFF 29 (Geoffrey W. Bromiley trans., 1990), cited in Pantaloni, *supra* note 221, at 705.

224. Pantaloni, *supra* note 221, at 694.

225. *Id.* at 706.

226. M. ETHAN KATSH, LAW IN A DIGITAL WORLD 7 (1995).

I have little doubt that the *quantity* of change the information age is bringing to international law will be stunning, probably unprecedented since the Peace of Westphalia ushered in 350 years of state-centric international law.

The pessimist might see the world dividing into two, increasingly segregated, camps: those with the technology and training to obtain and use information and those without.²²⁷ The optimist might see an entirely new era where technology sharpens the critical faculties of people and compensates for human frailties. The promise of the information age recalls Shakespeare's sonnet:

If the dull substance of my flesh were thought,
Injurious distance should not stop my way;
For then, despite of space, I would be brought,
From limits far remote, where thou dost stay.
No matter then although my foot did stand
Upon the farthest earth removed from thee;
For nimble thought can jump both sea and land
As soon as think the place where he would be.
But, ah, thought kills me that I am not thought,
To leap large lengths of miles when thou art gone,
But that, so much of earth and water wrought,
I must attend time's leisure with my moan,
Receiving naught by elements so slow
But heavy tears, badges of either's woe.²²⁸

Today's electronic systems at their best seem to move with the grace and speed of human thought. In 1968, Professor Rohn, one of the first scholars to see the relevance of computers to the study of international law, wrote, "[I]f Grotius were alive today, he would use computers as well as brains and books."²²⁹ Ultimately, I believe that computers and the global networks they drive will produce the most profound changes to international law since Grotius wrote *Mare Liberum*.²³⁰

227. For an interesting discussion of who will be left behind in the information age, see *The Information 'Have Nots'*, *supra* note 215.

228. THE PELICAN SHAKESPEARE: THE SONNETS 64 (Douglas Bush & Alfred Harbage, eds., 1983) (Sonnet No. 44).

229. Peter Rohn, *The United Nations Treaty Series Project*, 12 INT'L STUD. Q. 174, 189 (1968).

230. See Kenneth R. Simmonds, *Grotius and the Law of the Sea: A Reassessment*, in GROTIIUS ET L'ORDRE JURIDIQUE INTERNATIONAL 43 (Alfred Dufour et al. eds, 1985).