Chapter 3

The International Arena

Contents

Boxes

Tables

Chapter 3
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The international nature of the software industry and market is mirrored in the global significance of national intellectual property laws and international treaties and agreements. This ''globalization' [1] of the law reflects the reality that the laws of a country are affected by, and in turn, affect, the laws of other countries, Influenced by politics, trade agreements, and the reality that similarly trained professionals, the same companies, and the same technology issues exist throughout the world, there is an increasing tendency for countries to make at least somewhat similar policy choices. This chapter examines the nature of the global software industry and the issue of piracy, multilateral and bilateral negotiations and treaties entered into to provide protection for intellectual property rights, ongoing efforts at harmonization[2] of' international intellectual property law. and the United States' participation in those negotiations and efforts. [3]

The Global Software Industry

only 15 years ago, computers and software were not mass-marketed. retail items. The mainframe and minicomputers of the day were few in number, compared to the number of microcomputers (personal computers) in use today, Those machines were operated by expert staff using expensive, often custom-developed (almost certainly customized) software; some relatively sophisticated users (e.g., in universities, large corporations and research organizations) developed and maintained their own programs. An independent software vendor community had begun to develop in the mid- 1950s;[4] nevertheless, much of the application software for specific tasks like inventory control, payroll, or ' 'number crunching' was provided by hardware manufacturers, or custom-developed under contract. Where software packages were available, they almost always required custom-tailoring to meet users' needs and operating requirements. Although there were some independent software vendors in the systems-software marketplace,[5] almost all operating-system software to run the computer and control its input, output, and logic functions was provided by computer-hardware manufacturers. [6] In the late 1960s, this changed as the ''independent" software industry began to flourish. By 1990, there were thousands of independent software developers of various sizes in the United States. comprising a $35-billion industry.[7]

What ***Do We Mean by the*** *"Software Industry*

Accurate data on software industry revenues and market shares are difficult to compile. Indeed, there are many types of ''software industry data being

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[1] For further discussion of the concept of global ization, see Raymond T Nimmer, ' 'Globalization of Law: Commercial and Intellectual Property Markets '' Paper delivered at the Law and Society Conference, Amsterdam, June 1991, to be published as ''Global17~tion of Law: The Lessons of Software and Intellectual Property Law, " *Law in Context,* vol. 10, No. 2, 1992. Nimmer characterizes ''globali~~tion' as ' 'a world process m which legal concepts, approaches to defining and solving legal issues, and the development of legal policy in one country are resolved with explicit attention to the laws of other countries and m which import and export rules arc seen as important factors in commercial competition and in the regulation of that competition and of commercial transactions by law '' He further notes the striking impact of globalization in the past decade and points out the time and energy devoted to influencing the law outside of one's own country and in responding to such efforts.

[2] Ibid '' Harmonizat ion' is defined by R, Nimmer as a systematic effort to bring about some uniformity of the law. The underlying premise is that there are advantages in various areas of law that can be attained by establishing a basic symmetry in some area of national laws and an acceptance of legal principles from one country to another

[3] **Such** efforts at glob. lization raises issues of tensions between developed and developing countries in the context of the General Agreement on Tariffs and Trade negotiations on Trade Related Intellectual property and North-South tensions. Extensive discussion of these questions lies beyond the scope of this study However, for analysis of these issues, see Jerome H. Reichman, ''Intellectual Property in International Trade: Opportunites and Risks of a GATT Connection, ' *Vanderbilt Journal of Transnational Law,* vol. 22, 1989, p **747, at** pp. 751-769.

[4] Ronald Palenski, ADAPSO (The Computer Software and S ervices Industry Associat Ion), personal communication, July 10, 1991. ''Independent'" developers arc not part of a hardware manufacturer

[5] Ibid

[6] While this ' s still prevalent there i s a trend away from computer manufacturers prov id ing operating-systems so ftware in the personal computer market (e g , MS/DOS, DR/DOS) and in workstations and mainframes (e g , Unix) Ibid

[7] Input data provided by ADAPSO (performance of ''softw.arc' sector). total for ''In formation technology' products and serv ices for 1990 is $100 billion

Table 3-l—Top 10 Software Companies in North American Market

Company	Estimated revenues ($ millions) 1989	1990
IBM	$8,424	$9,952
Microsoft	821	1,323
Computer Associates	1,290	1,311
Digital	825	810
Oracle	554	702
Lotus	516	635
Unisys	875	600
D&B Software	450	539
WordPerfect	281	452
Novell	288	388

SOURCE: Revenues shown for the *Datamation 100* North American market, *Datamation, vol. 37, No.* 12, June 15, 1991, p.22.

Table 3-2—Top 10 Personal-Computer Software Companies in 1990

Company	Revenues ($ millions)
Microsoft	$953
Lotus	556
WordPerfect	281
Ashton-Tate	265
Autodesk	177
Adobe	121
Logitech	112
Software Publishing	110
Borland International	104
Aldus	88

NOTE: Network software companies not included.

SOURCE: Data compiled by *Soft-Letter* (Watertown, MA: 1991),

collected and reported by different organizations.[8] These include data about:

- *software and services,* including processing and professional services, as well as software products;
- *application and systems software,* including applications software and systems software, whether packaged or custom-developed;
- *packaged software,* including applications and systems software;
- *custom software,* professionally developed or extensively tailored to meet a customer's specific needs;
- *personal computer (PC) software,* usually sold as packaged software (although not all packaged software is for personal computers); and
- *software from ''independent' developers,* who are not part of a hardware manufacturer.

This variety of data, collected by different organizations, makes comparison and synthesis difficult.[9] *Consistency across types of data and years is usually not possible when drawing from these published figures.* Wherever possible, OTA will specify the type and source of market data (e.g., ''software, ''independent software, ''software and services and estimates. Therefore, estimates in this report for a given year may not ' 'add up' and different data sources may not be comparable, With market figures drawn from various sources, box 3-A provides a snapshot of the U.S. software market in the late 1980s. In 1987, the largest U.S. software vendor was IBM, followed by Digital Equipment Corp. (DEC), Unisys, Computer Associates International (CAI), and Lotus Development Corp. For comparison, table 3-1 shows 1989 and 1990 revenues for the largest software companies in the North American market and table 3-2 shows 1990 revenues for the largest personal computer software companies,

Global Markets, Global Technology

By almost any measure, the United States has a premier role, both as producer and consumer of software:

- According to one industry estimate, U.S. demand accounted for 52 percent of world *software* consumption in the late 1980s.[10]
- According to estimates by the U.S. Department of Commerce, global revenues from sales of *software* were more than $65 billion in 1989 and U.S. software suppliers accounted for more than 60 percent of global software sales,[11]

[8] For example, the Software Publishers Association collects data on packaged PC software; ADAPSO reports data on software and services, usually (but not always) from independent mainframe and minicomputer software houses; CBEMA reports data on the information technology industry, including office equipment, telecommunications, electronic data processing equipment, and software and services (including software produced by hardware manufacturers). Moreover, "hardware" companies also are software producers-sometimes, like IBM, the largest in the world,

[9] For instance, a firm whose products include PC applications may have at least some of its revenues included in ' 'PC-application software, ' or "packaged software' it may be included in ''software and services, and may or may not be an ' 'independent software house, But a firm whose main products are PC networking software is likely not to be included in data on ' 'PC-application software. "

[10] ADAPSO estimate in Jeff Shear, ' 'Competitive Software Industry Suits Up for Global Hardball," *Insight*, July 10, 1989, p, 38.

[11] Commerce Department estimate cited in Keeping *the U.S Computer Industry Competitive Defining the Agenda*, Computer Science and Technology Board (Washington, DC: National Academy of Sciences, 1990), pp. 3031.

Box 3-A—A Snapshot of the Domestic Software Market in the Late 1980s

According to the Computer and Business Equipment Manufacturers' Association (CBEMA), the U.S. software and services industry earned some $54 billion in domestic revenues in 1987 and about $68 billion in 1988. [1] Of these figures, revenues from software products (as opposed to processing and professional services) amounted to about 34 percent of the total in 1987 and 40 percent in 1988.[2]

According to the Association of Data Processing Service Organizations (ADAPSO), application and systems software from *independent software* houses comprised a $20.6 billion U.S. market in 1987 and a $25.1 billion market in 1988, split roughly 50-50 between application and systems revenues.[3] If the value of software developed ''in-house' by businesses and other organizations is taken into account (measured by salaries and other costs), some estimate that the total domestic U.S. software 'market' may be as much as $150 to $200 billion larger.[4]

According to the market-research firm, Input, application and systems software revenues in the United States totaled $20.6 billion in 1987. The largest U.S. software vendor *overall* **that year was** IBM, with 15 percent of the U.S. market and $3.1 billion in revenues; next were DEC ($935 million), Unisys ($585 million), Computer Associates International ($415 million), and Lotus ($396 million).[5] The leading *applications software* vendors in 1987 were IBM ($775 million in applications software), followed by Lotus ($396 million), DEC ($195 million in applications software), Dun & Bradstreet Corp. ($170 million), and Management Sciences America ($169 million).[6] The leading systems software vendors in 1987 were IBM ($2.3 billion in systems software), DEC ($740 million in systems software), Unisys ($420 million), Computer Associates International ($250 million), and Hewlett-Packard ($190 million).[7]

The largest *independent* U.S. software vendor in 1987 was Computer Associates International ($415 million); next were Lotus ($396 million), Microsoft ($240 million), Ashton-Tate ($170 million), and Management Sciences America, Inc. ($169 million).[8]

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[1] CBEMA, *The Computer, Business Equipment, Software and Services, and Telecommunication Industry, 1960-2000* (Washington, DC: CBEMA, Industry Marketing Statistics, 1990), table 4-7, p. 100.

2 Ibid.

3 Market research data from Input reported by ADAPSO, 1989. [*OTA note:* "Independent" software houses are those that are not part of a hardware manufacturer. For example, as of 1990 Microsoft was the largest U.S. ''independent' software developer, but IBM was the largest software vendor in the world.]

4 Michael L. Dertouzos et al., *Made* in *America: Regaining the Productive Edge* (Cambridge, MA: MIT Press, 1989), p. 264 (cited in: *Keeping the U.S. Computer Industry Competitive: Defining the Agenda*, Computer Science and Technology Board (Washington, DC: National Academy of Sciences, 1991), p. 30.)

5 Input, "U.S. Software Products Market, 1988-93," Mountain View, CA, December 1988.

6 Ibid.

7 Ibid.

8 Ibid.

. According to the International Trade Commission, by 1988, U.S. *independent software* developers' revenues exceeded $25 billion, up from $20 billion in 1987;[12] about 40 percent of these revenues were from foreign sales.[13]

. According to the Business Software Alliance (BSA), in 1989 the *computer programming and software industry* comprised 1.18 percent of *GNP (gross* national product), generated $61.6 billion, and generated $12.1 billion in foreign sales by U.S. firms.[14]

. Sentry Market Research has estimated that 1990 worldwide sales of U.S. *packaged software* approach $25 billion.[15]

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12 ADAPSO figures on industry performance, 1989. These data for 'noncaptive" firms excludes the value of software produced in-house by hardware manufacturers; revenues are split about evenly between application and operating-system software.

For comparison, CBEMA estimates of North American software and services revenues were about $63 billion in 1988 and $56 billion in 1987. (' 'Information Technology Industry Global Market Analysis," CBEMA, 1989, table 4-22.)

13 U.S. International Trade Commission, ''The Effects of Greater Economic Integration Within the European Community on the United States,' July 1989, pp. 4-39. [*OTA note:* "Independent" software houses are those that arc not part of a hardware manufacturer.]

14 BSA press release, Oct. 31, 1990.

15 *Software Magazine Executive Letter,* vol. 7, No. 2, March/April 1990, p. 2.

. According to the Software Publishers' Association (SPA), North American revenues from *packaged software for microcomputers* (personal computers) were $4.5 billion in 1990, up 22 percent from 1989.[16]

Taking a different tack and looking at the market for *software and services:*[17]

- The Computer and Business Equipment Manufacturers Association (CBEMA) estimates that North American demand has accounted for a substantial and steady share of world consumption—about 50 percent of software and services between 1973 and 1988. During this period, the world market for software and services as estimated by CBEMA grew from $4.7 billion in 1973 to $63.1 billion in 1988 (a compound growth rate of almost 19 percent) .18
- According to International Data Corp. (IDC) estimates, the worldwide market for software and services was about $110 billion at the end of the 1980s, with 57 percent ($63 billion) held by U.S. companies. The next largest share, according to IDC, was held by Japan ($14 billion, 13 percent), followed by France ($9 billion, 8 percent), Germany ($8 billion, 7 percent) and Britain ($7 billion, 6 percent) .19
- According to CBEMA, the U.S. software and services industry had domestic revenues of some $93 billion in 1990, about a 16 percent increase from 1989 revenues of about $80 billion. Of these domestic revenues, CBEMA estimates that software products accounted for about 45 percent of the total--$42.5 billion in 1990 and $35 billion in 1989.[20]

Although its share of the world software market has declined over the past decade or so, the United States is still the world's leading innovator and producer of computer software.[21] U.S. producers are increasingly challenged by competition from developing software industries abroad, particularly in Europe. Europe has been a very important market for U.S. firms, which dominated their European rivals. In the late 1980s, U.S. software producers held almost half of the European software market, with IBM being the largest single software vendor in the European market.[22] (See table 3-3.) In 1990, according to SPA, U.S. companies had more than 70 percent of the European PC-software market.[23]

Growth in the U.S. software market had slowed from the 50 percent per year (or better) rates of the early 1980s to about 15 percent per year by 1989, according to the SPA. But markets in Europe and Japan are booming. Industrywide, international sales account for some 34 percent of software publishers' revenues, according to the SPA. But many companies (like Microsoft) report international sales closer to half their overall revenues. U.S. software is so pervasive, in part, because of the head start the U.S. industry enjoyed and the large size of the domestic U.S. market.[24] Our large domestic market has given the U.S. industry significant advantages: a nation's domestic software market is an important base for developing the expertise and experience that are necessary to compete successfully (through exports)

16 Ken Wasch, Nicole Field, and Sara Brown, SPA, personal communication, July 30, 1991.

17 *OTA note:* Revenue reported for 'software and services'' includes revenues from processing and professional services, as well as from custom and packaged software products.

18 ''Information Technology Industry Global Market Analysis, ' CBEMA, 1989, table 4-22.

19 IDC data reported in Richard Brandt et al., "Can the U.S. Stay Ahead in Software?" Business *Week, Mar.* 11, 1991, pp. 98-99.

20 Oliver Smoot, CBEMA, personal communication, June 30, 1991. See also CBEMA, The *Computer,* Business *Equipment, Software and Services, and Telecommunications Industry, 1960-2000* (Washington, DC: CBEMA, Industry Marketing Statistics, 1990), p. 100. (Estimates from BDA Assoc. forecast.)

21 By 1993, the United States is still expected to hold about half of the world software market. (Robert Schware, ''Sofwme Industry Entry Strategies for Developing Countries,' *World Development Journal,* vol. 20, No. 2, February 1992, p. 3.) Studies in the late 1980s reported that U.S. producers held a 70 percent share of the global market for software, with European producers holding a 10 percent share and Japanese producers holding a 15 percent share. (Commission of the European Communities, "Green Paper on Copyright and the Challenge of Technology—Copyright Issues Requiring Immediate Action,'' June 1988, pp. 1'71-172.) Part of the decline in the U.S. share of the software market has come about naturally as software use becomes more widespread abroad and other nation-s' software industries develop.

22 According to some market estimates, in the mid-1980s IBM accounted for 60 percent of world volume in software sales and 70 percent of world profit in software. (Market estimates cited by Gene Bylinski, "The High Tech Race: Who's Ahead," *Fortune,* vol. 114, Oct. *13, 1986,* p. 28.)

23 Ken Wasch, Nicole Field, and Sara Brown, SPA, personal Communication July 30, 1991.

24 Rachel Parker, "Software Spoken Here, " *InfoWorld,* June *25, 1990,* pp. 47-49.

Table 3-3—Top 10 Packaged Software Vendors in Europe (1989)

Company	1989 sales ($ millions)
IBM	$2,120
Siemens AG	398
Nixdorf AG	374
ICL	318
Bull HN	314
DEC	279
Olivetti	236
Unisys	183
Microsoft	152
CAI	152

SOURCE: Market research data from Ovum cited in: Ralph Bancroft, "Europe Strugglingin Software;' Computerworld, July 23, 1990, p,97.

in the international marketplace.[25] (For more on global economic competition, with an emphasis on high technology, see the fall 1991 OTA report *Competing Economies: America, Europe, and the Pacific Rim.*[26]*)*

With the prospect of a unified market and standards in Europe in 1993, U.S. firms are facing new competition from Japanese software producers who are establishing themselves in Europe through acquisitions, as well as invigorated competition from European vendors. The United States faces growing competition in Asia from Japanese producers; at the same time, software industries in other Asian nations are developing rapidly. And in the United States, U.S. firms face new competition in the domestic market from foreign competitors like the Sony Corp. The selected examples of computer hardware and software initiatives in Europe, Japan, Taiwan, and Singapore found in appendix A are intended to give a flavor of the varying stages of maturity and areas of emphasis in some of the overseas industries that are competing with the United States in the global marketplace.

The Issue of Piracy

Creators of commercial software are concerned about their profitability; an important rationale for creation and enforcement of intellectual property rights is to give commercial software developers adequate market incentives to invest the time and resources needed to produce and disseminate innovative products. Illegal copying of software results in financial losses to U.S. software firms both directly, through loss of sales and/or royalties, and indirectly, through loss of investment opportunities.[27]

Retail piracy-duplication of an entire program for sale by ' 'pirate' competitors—and counterfeiting are major concerns of most software companies.[28] These concerns *can be dealt with fairly straightforwardly, at least in theory, by copywright law.*[29] *In practice, enforcement--especially overerseas-is difficult.* Unauthorized end-user copying may be of more concern to some segments of the software industry than to others. For example, noncommercial, private copying by one's current or prospective customers (e.g., making an unauthorized copy of a spreadsheet program for a friend or family member) is a priority concern for developers of *packaged* software, especially personal computer software.[30] Unauthorized end-user copying by businesses and other organizations (e.g., making multiple copies of packaged software instead of obtaining additional legitimate copies or arranging for a site license) is a major concern currently receiving vigorous attention

25 See Schware (1992), op. cit., footnote 21. Schware's analysis concludes that countries without a fairly robust software industry will find it increasingly difficult to ''catch up' and that the learning curves for domestic and export market activities are quite different, with the domestic market providing an important foundation for subsequent export activities. Schware examines software-industry strategies used in India and Brazil and concludes that both industries are trying to ''walk on one leg—the domestic leg in the case of Brazil and the export leg in the case of India' (p. 1).

26 U.S. Congress, Office of Technology Assessment, *Competing Economies: America, Europe, and the Pacific Rim,* OTA-ITE-498 (Washington, DC: U.S. Government Printing Office, 1991).

27 For discussion of revenue 1osscs due to piracy, see U.S. International Trade Commission, ''Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade, " February 1988, ch. 4.

28 *IOTA note.* This text uses the phrase ''retail piracy' (suggested by BSA) to mean unauthorized copying for the purposes of selling the illegal copies or close derivatives; ' 'counterfeiting' to mean passing off illegal copies as the real thing; ''end-user piracy' to mean copying by users but not to sell the copies.]

29 Jerome Reichman notes that Anglo-American law tends to use copyright to redress ' 'piracy" (i.e., slavish imitation) because these countries lack a general-purpose unfair competition law based on the European model. Reichman considers that more attention needs to be paid to repression of piracy through international norms of unfair competition law. (Personal communication, Sept. 17, 1991.) See Jerome H. Reichman, *Proprietary'} Rights in Computer-Generated Productions,* paper presented at the WIPO Worldwide Symposium on the Intellectual Property Aspects of Artificial Intelligence, Stanford University, April 1991.

30 This type of unauthorized copying is difficult t. detect and enforce against—copying software at home is relatively easy and inexpensive. Estimates of losses vary and reports of losses may be somewhat overstated because it is not clear that each unauthorized copy displaces a sale.

from software publishers.[31] By contrast, developers are unlikely to worry about end users making copies of 'hard-wired' microprocessor instruction sets at home or at the office, at least with currently available technology.

Estimates of Financial Losses From Piracy

Estimates of financial losses due to piracy vary. ADAPSO (The Computer Software and Services Industry Association) has, estimated that one of every two copies of personal computer software used by corporations in the United States is an illegal copy. In introducing legislation (S.893) to institute strong penalties for violation of software copyright, Senator Orrin Hatch noted that estimates of 1989 losses to the software industry from illegal copying in the United States amounted to $1.6 billion.[32] In 1990, the Software Publishers Association estimated that developers of packaged PC software lost $2.2 billion to piracy within the United States,[33] up from an estimate of $1 billion in 1986.[34]

Industry estimates of losses from piracy show marked increases. In 1988, the International Intellectual Property Alliance (IIPA) estimated that the U.S. software industry lost $547 million to piracy in 12 "problem" countries; by 1990, the IIPA estimated that software piracy in 22 "problem" countries caused software-industry losses of over $2.7 billion.[35] Other estimates of the extent of piracy worldwide are much higher: the Business Software Alliance estimates that-looking at all *types of* software--software piracy worldwide causes the U.S. industry to lose $10 to $12 billion annually, compared to the $12 billion generated by foreign sales of U.S. software.[36]

Redress of piracy abroad is often difficult and is intertwined with issues of technology transfer and assistance to developing countries. *A complete treatment of issues involved in North-South or East-West technology transfer and/or international assistance is beyond the scope of this report.* The following points are intended to suggest some of the complexities in international agreements on intellectual property standards and enforcement. Most of the industrialized, developed countries have strong intellectual property protections, whereas many of the lesser developed countries, where software development itself is much younger,[37] either do not have strong intellectual property laws or do not enforce them.[38] In terms of North-South trade and technology transfer issues, the views of the self-interest of the more industrially advanced nations often conflict with those of the lesser-developed nations. Industrialized countries want to protect industries that are

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31 The Business Software Association (BSA) notes that site licenses are not the packaged-software industry norm. (Robert W. Holleyman and Lori Forte, BSA, personal communication, July 12, 1991.)

32 S. 893 would amend Title 18 U. S. C., 2319, to include reproduction or distribution of 10 or more infringing copies of One Or more copyright programs. See *Congressional Record*, Apr. 23, 1991, pp. S4862-4863 for Sen. Hatch's statement and the text of the bill, sponsored by Sen. Hatch and Sen. DeConcini.

33 Ken Wasch, Nicole Field, and Sara Brown, SPA, personal communication July 30, 1991.

SPA's estimate is based on "average" software prices and an "expected ratio" of software applications to new personat computers purchased in 1990. SPA obtained hardware sales numbers for DOS-based and Apple computers from Dataquest. SPA obtained expected ratios of software to hardware from Apple, Microsoft, and Lotus; the expected ratios were 3 software applications per DOS machine and 5 per Apple machine, Actual ratios, based on software sales, were 1.78 for DOS machines and 2.55 for Apple machines. (Nicole Field, SPA, personal communication, Aug. 14, 1991.)

34 The SPA estimated that microcomputer-software producers lost about $1 billion in sales to "piracy" (defined by SPA as including both copying for personal use and copying for commercial profit) in 1986. (SPA estimate cited in Anne W. Branscomb, "Who Owns Creativity? Property Rights in the Information Age,' *Technology Review, vol. 91, No. 4,* May/June 1988, pp. 39-45.)

35 The IIPA's 1988 estimate of losses to software piracy considered these 'problem" countries: China, Saudi Arabia, South Korea, India, Philippines, Taiwan, Brazil, Egypt, Thailand, Nigeria, and Malaysia. IIPA estimates cited in: "Curbing International Piracy of Intellectual Property," prepared by Gary M. Hoffman, Report of the International Piracy project, The Annenberg Washington Program, 1989.

The 1990 IIPA estimate considered 22 "problem'* countries; estimate provided by Robert W. Holleyman and Lori Forte of the BSA (personal communication, July 12, 1991).

36 Robert W. Holleyman and Lori Forte, BSA, personal communication, July 12, 1991. Estimate includes all types of software, not just PC software. Foreign sales of PC application software are substantially less: SPA estimates that sates of packaged PC application software amounted to $4.5 billion in 1990--up 22 percent from 1989—and that foreign sales amounted to about $2 billion. (Ken Wasch, Nicole Field, and Sarah Brown, SPA, personal communication% July 30, 1991.)

37 In the United States during the 1970s, Congress and the courts focused on the application and scope of copyright for software; issues concerning patent protection for software-related inventions and algorithms resurfaced in the 1980s. Subsequently, Western Europe, Japan, and Taiwan have developed at least some intellectual property provisions for software. In the Third World, where software development itself is much younger, development of intellectual property measures for software maybe slower than in nations whose domestic software industries are more advanced.

38 See Raymond T. Nimmer and Patricia Krauthaus, "Classification of Computer Software for Legal Protection: International Perspectives, " *International Lawyer, vol. 21, s*ummer 1987, pp. 733-754.

strong sectors in their economies and want to promote free trade to benefit from these investments. Lesser-developed countries want low-cost access to technology in order to promote and modernize business; many (e.g., Brazil) also want to encourage fledgling domestic industries.[39]

The industrialized countries want international agreement with high minimum standards and long periods of protection for intellectual property (for example, 20-year terms for patents, 50-year terms for copyright, 10-year terms for semiconductor chip layouts).[40] Many of these nations also are interested in pursuing harmonization of laws among countries. Industrialized countries argue that, in the long term, ''strong' intellectual property regimes will encourage both domestic innovation and foreign investment by reducing fears of piracy. According to this view, without an acceptable intellectual property regime, technology transfer to lesser-developed countries will suffer because foreign firms will be unwilling to sell goods there or invest in production facilities, absent intellectual property protections. Moreover, proponents consider that adequate protection will also help foster the emergence and development of a domestic software industry[41] and facilitate access to world-class technology .42

In some newly industrializing countries these long-term arguments may be well received but in other countries, where domestic high-technology development is far from a reality, there maybe more urgency for nearer-term considerations. These nations argue that tighter protection for intellectual property will harm development by reducing technology transfer and diffusion in the near term, will strengthen multinational corporations at the expense of domestic industries, and will raise prices of goods (e.g., for patented pharmaceuticals, copyrighted software, etc.) for consumers who are already poor by Western standards.[43] Therefore, near-term U.S. threats of trade retaliation against piracy have been more persuasive than long-term arguments about foreign investment and technology transfer in encouraging countries in Southeast Asia and Latin America to strengthen the terms and enforcement of their intellectual property systems.[44]

Examples of Retail Piracy and Counterfeiting

In 1984, Apple Computer, Inc. filed civil suit against Franklin Computer Corp. for copying Apple's operating system and other software; Franklin subsequently paid Apple $2.5 million to settle the case. Since then, Apple has filed criminal complaints against manufacturers producing ''clones' of its popular Macintosh line of personal computers. In 1990, Apple filed criminal complaints against two Taiwanese manufacturers, Flive Computer Corp. and Akkord Technology, Inc., for producing and selling copies of the Macintosh Plus.[45]

Also in 1990, Novell began concerted efforts to find and file suit against dealers selling or distributing illegal copies of Novell's Netware network software. In announcing these efforts, an attorney representing Novell stated that many instances of Netware piracy involve dealers and resellers who give away illegal copies of Netware to make a hardware sale or install illegally copied Netware under value-added applications.[46] Novell estimated

39 For discussion of Brazil's software strategies, see Schware (1992), Op. Cit., footnote 21.

40 Minimum copyright standards are keyed to the Beme Convention's minimum standards.

41 Robert Schware notes that, in India, software piracy has forced some companies out of the domestic packaged software market and is likely to force others out soon. In Brazil, lack of protection for software prior to the 1987 Software Law (No. 7646) was a serious concern for U.S. companies and the U.S. Department of Commerce. (Schware (1992), op. cit., footnote 21.)

42 These arguments are not unique t. intellectual property for software. For discussion, see Robert M. Sherwood, *Intellectual Property and Economic Development* (Boulder, CO: Westview Press, Inc., 1990).

43 For further discussion of the conflicting self. interests of industrialized and less. developed nations see, for example, ' 'Thought Control: GATT' and Intellectual Property, " *The Economist,* July 7, 1990, p. 68 and Robert Schaffer, "Trading Away the Planet,'' *Greenpeace,* September/October 1990, PP. 13-16. Sherwood (1990), op. cit., footnote 42, offers a different perspective, looking at cases from Brazil and Mexico.
Schware (1992), op. cit., footnote 21, examines Brazil and India and discusses how both domestic and export-oriented strategies are necessary for a country to ''catch up' in software.

44 Robert Sherwood notes that,' 'Mexico's recent enactment of a comprehensive patent and trademark law reflects the long-term argument mOre than the near-term threat of retaliation." (Personal communcation, Aug. 13, 1991.)

45 James Daly, ''Apple Zaps Clone Makers in Taiwan, ' *Computerworld,* vol. 24, No. 14, Apr. 2, 1990, p. 96.

46 Roxanna Li Nakamura and Margie Wylie, "Novell Goes After Dealers Who Sell Fake Netware," *InfoWorld,* vol. **12, No. 28,** July 9, 1990, p. 5 (quoting Stephen Tropp of Shea & Gould).

that each illegal copy of Netware represented from $1,000 to $8,000 in lost sales.[47]

According to Microsoft Corp., software counterfeiting-where pirated programs are sold as legitimate copies—is on the rise in the United States. Microsoft has gathered evidence that its popular microcomputer operating system, MS/DOS, has been hard hit by counterfeiters.[48] (By contrast, copyright infringement of Microsoft's other software products usually takes the form of ''end-user piracy' by individuals or businesses.) A Microsoft market-sampling effort uncovered evidence for lawsuits alleging that counterfeit MS/DOS sales displaced more than $1.5 million in legitimate sales.[49] In June 1991, a Federal jury awarded Microsoft and the Everex Corp. (a personal computer manufacturer and systems integrator) $1.4 million in damages in a suit against eight defendants accused of counterfeiting Microsoft software.[50]

End-User Piracy in Businesses

In 1988, a group of six major U.S. software publishers formed the Business Software Alliance (BSA) to pursue corporate customers abroad who distribute unauthorized copies of programs to employees (rather than obtaining legitimate copies or abiding by license agreements) and to educate users in the commercial and educat ional markets about the copyright laws. BSA'S worldwide activities focus on: 1) litigation on behalf of its members against infringers of software copyrights; 2) public awareness (encouraging organizations to ensure legitimate and ethical software use); and 3) government relations (working with the U.S. and foreign governments to strengthen intellectual property legislation and enforcement) .51 The BSA, currently comprised of eight corporate members, has become an ' 'international policing arm' for the software industry and works closely with SPA.[52]

Even prior to 1988, software industry groups such as SPA and ADAPSO have been addressing the issues of retail piracy *(OTA term: copying to sell the copies)* and end-user piracy *(OTA term: to avoid buying more copies but not to sell copies)* by businesses and other organizations. SPA continues to fight domestic piracy by filing lawsuits and conducting audits of corporations, computer dealers, bulletin boards, and individuals who allegedly have illegal copies of software. Over the last 3 years, SPA has filed over 100 lawsuits for unauthorized copying; in mid-1991 SPA filed suits at a rate of two per week .53

The SPA estimates that unauthorized corporate copying of business PC software in the United States costs software publishers $2.2 billion a year in lost sales[54] and that, for every legal software package in use in the United States, an unauthorized copy is also in use.[55] According to Ken Wasch, executive director of SPA, "It is most unfortunate that the software industry, which is a leading international competitor, is faced with enormous losses every year from individuals unwilling to purchase software legitimately. '[56] Although each unauthorized copy does not necessarily constitute a lost sale for the industry, some industry spokespersons judge that the overall piracy rate is high enough to damage the software industry by limiting funds available for research and development and by driving up retail prices.[57]

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47 Ibid.

413 ''Counterfeiting'' refers to illegal copies passed off as "the real thing.'

49 Roxanna Li Nakamura, ''Software Publishers Crack Down on Piracy," *InfoWorld,* June 25, 1990, p. 39 (quoting Debra Vogt of Microsoft; Vogt headed the market-sampling project).

50 "Roundup," *The Washington Post,* June 13, 1991, p. B12.

51 ''BSA Profile," Business Software Alliance, July 1991.

52 Andrew Jenks, ''As Software Piracy Spirals, Industry Cops Get Tougher, " *Washington Technology,* June 13, 1991, p. 16 (interview with Robert W. Holleyman, BSA managing director).
BSA has affiliates ("eyes") in about 30 countries. (Robert W. Holleyman and Lori Forte, BSA, personal communication, July 12, 1991.)

53 Ken Wasch, Nicole Field, and Sarah Brown, SPA, personal communication, July 30, 1991.

54 Ibid.

55 According t. SPA, others have estimated that the ratio is as high as five unauthorized copies for every legal one. (Janet Mason, ' 'Crackdown on Software Pirates," *Computer-world,* vol. 24, No. 6, Feb. 5, 1990, pp. 110-115, quoting Peter Beruk of SPA, pp. 110-1 11,)

56 Ken Wasch, Nicole Field, and Sarah Brown, SPA, personal communication, July 30, 1991.

57 Janet Mason, ''Warning: Here Come the Software Police, " *Across the Board,* October 1990, p. 42, quoting Mary Jane Saunders, then-general counsel of SPA.

In 1989, SPA helped five software publishers file the first multivendor suit against a corporation for copying their programs. The suit, against a New York-based publishing company, reportedly reached a six-figure, out-of-court settlement. SPA reportedly also settled four other business piracy cases out of court, with the proviso that the corporations' names would not be released.[58] As part of their education and enforcement efforts, SPA and BSA maintain toll-free piracy hot lines for reporting of cases of suspected piracy and assist firms in conducting voluntary software audits and formulating organizational software-ethics policies.[59] SPA provides a free auditing kit, which comes with diskettes and a license for "SPAudit," SPA's software-auditing program, a list of suggested procedures for a corporate self-audit, sample corporate memoranda on illegal software use, and educational brochures about copying and the law.[60]

In January 1991, SPA announced a $75,000 settlement against a sports management and marketing group based in Northridge, Illinois. In addition to the settlement, the organization was required to destroy its unauthorized copies of software.[61] The SPA, accompanied by a U.S. marshal, had staged a raid in November 1990 and found 80 unauthorized copies of WordPerfect and Lotus 1-2-3. SPA publicized the raid and settlement to remind the public that software piracy is illegal: one SPA advertisement pictured handcuffed wrists with the caption, "Copy software illegally and you could get this hardware absolutely free."[62] In February 1991, SPA announced a $300,000 settlement with a large construction engineering firm, its largest settlement at that time. The firm agreed to destroy all unauthorized copies of software published by Lotus, WordPerfect, and Software Publishing, institute formal internal control procedures in all its offices, and allow SPA to perform annual audits over the next 2 years. In May 1991, SPA announced a $350,000 settlement with a Seattle-based environmental and engineering consulting firm. The firm agreed to destroy the illegal software and institute formal control procedures.[64]

Some software publishers have offered "amnesty" programs allowing unauthorized users to register their copies of software and become eligible for support and future upgrades. In November 1989, one publisher of software utilities announced that it had signed up some 5,000 previously unauthorized users under the amnesty program; users of unauthorized copies paid $20 and received a registered copy of the latest version of the program and a user manual. The firm also signed up an additional $1OO,OOO in corporate site licenses.[65]

Examples of Piracy Overseas

The BSA anti-piracy program operates outside the United States and Canada. For example, in early 1990, BSA identified a major New Zealand bank, an oil company, and an entertainment group as being among firms allegedly pirating software in New Zealand, and announced plans to prosecute one of these organizations. As a result of BSA activities in New Zealand, many firms reportedly began requesting software audits and reevaluating their software acquisition policies.[66]

BSA estimates the level of unauthorized PC-software copying in foreign countries using ratios of the total numbers of legitimate application software packages and hardware units shipped and comparing them to the U.S. ratio. In the United States, approximately 1.66 legitimate software packages were shipped for every hardware unit shipped in 1989; by contrast, there is only one software package

58 Janet Mason, "Crackdown on Software Pirates, " *Computer-world*, vol. 24, No. 6, Feb. 5, 1990, p. 111.

59 In early 1990, SPA reported that more than 20 people a day were calling SPA's hot line to report piracy in their companies. (Ibid., quoting Mary Jane Saunders of SPA, p. 113.)

60 Michael Fitzgerald, "SPA Offers Free (Audit) Software, " *Computerworld*, Dec. 10, *1990*, p. 41. The free software kit is available by writing or calling SPA's offices in Washington DC.

61 Michael Fitzgerald, "SPA To Crank Up Efforts in Copy Crusade," *Computer-world*, Jan. ***28,*** 1991, pp. 1,92.

62 ''Keel~uling Software Pirates, ' *Business Week*, Feb. 18, 1991, p. 122H.

63 SPA press release, Feb. 25, 1991.

64 SPA press release, May 7, 1991.

65 Rachel Parker, ''Xtree Says Amnesty Program Is an 'Overwhelming Success, ' " *InfoWorld*, vol. 11, No. 46, Nov. 13, 1989, p. 87.

66 The New Zealand distributor for Lotus software, a member of the BSA, had estimated that, based on the number of requests for product updates and service it received, it had probably supplied only 20 percent of all the Lotus software in use in New Zealand. (Randall Jackson, ''Software Group Charges Major Firms With Piracy, " *Computerworld*, vol. 24, No. 13, Mar. 26, 1990.)

shipped for every three computers shipped in Italy or Spain and less than one for every computer shipped in France. Comparing each country's ratio with the U.S. ratio and using an "average unit value" for software, BSA estimated that lost revenues from PC-software piracy in 1989 amounted to $628 million in France and $439 million a year in the United Kingdom-roughly equivalent to the amount of software sales revenues in each of these two countries. This method yielded estimated losses in Italy and Spain of $768 million and $792 million, respectively; the largest estimated losses ($1.44 billion) were in what was then West Germany.[67] (See table 3-4.)

In December 1990, three members of BSA (Microsoft Corp., Ashton-Tate, and Lotus Development Corp.) filed suits for piracy against Rhone-Poulenc Films of France and Marconi Instruments, a division of General Electric Co. PLC of the United Kingdom. These suits were filed following court-ordered searches following tip-offs to the BSA.[68] The three software houses also announced settlements of similar copyright suits against units of three French companies: Banque Parabas S.A., Telediffusion de France, and France Distribution Systems.[69] Another suit was filed against Italy's Montedison S.p.A. after a 1988 investigation found that 50 personal computers were running Lotus 1-2-3 with only 1 copy purchased and 20 were running dBase software with 1 copy purchased. Montedison contended that Italian law permits copying for personal use and that this provision applied to corporations.[70]

Using the "ratio" method and assuming that on average one would expect to find at least two application programs on each personal computer,

Table 3-4-Comparison of Software Sales and BSA Estimates of PC-Software Piracy in Selected European Countries

Country	Software sales-1989 estimate ($ millions)	Value of pirated software--BSA estimate ($ millions)
France	$605	$ 628
Italy	190	768
Sweden	188	151
United Kingdom . .	795	439
W. Germany	581	1,440

SOURCE: Dataquest, Inc. and Business Software Alliance, table shown in William M. Bulkeley, "Software Makers Are Pursuing 'Pirates' Around the Globe With Fleets of Lawyers," The *Wall Street Journal,* Dec. 13, 1990, p. B1.

BSA has prepared estimates of PC-software piracy in selected Asian countries.[71] For example, BSA estimates that 75 percent of the software in use in South Korea in 1990 was pirated. Individual companies' estimates of the extent of piracy in South Korea are higher: Lotus estimates that 90 percent of the Lotus 1-2-3 software used in South Korea is pirated; Ashton-Tate estimates that 85 percent of its database software in use in South Korea is pirated; and Microsoft estimates that about 65 percent of its MS/DOS software in use in South Korea is pirated.[72]

In countries encompassing the former Soviet Union, unauthorized copying of software has been rampant. The market research firm IDC estimated that by 1990, U.S. software producers had lost revenues on the order of $1 billion due to illegal copying.[73] In June 1990, the United States and the then Soviet Union signed an agreement[74] that included reaffirmation of both nations' commitments to adhere to the Berne Convention, to provide copyright protection for software, and to provide

67 "BSA Software Piracy Fact Sheet: European Countries, 1989," and Robert Holleyman and Lori Forte, BSA, personal communication, July 12, 1991. BSA estimated losses in 12 European countries in excess of $5 billion using the "ratio" method.

68 "SofWWe Firms Pursue Piracy," *New* Technology *Week,* Jan. 2, 1991, p. 7; and Holleyman and Forte, op. cit., footnote 67. By the close of 1991, the Marconi Instruments case had settled. (Lori Forte, BSA, personal communication, Feb. 14, 1992.)

69 William M. Bulkeley, "Software Makers Are Pursuing 'Pirates' Around the Globe With Fleets of Lawyers," *The Wall Street Journal,* Dec. 13, 1990, pp. B1, B6.

70 Ibid., p. B6. By the close of 1991, the Montedison case had been settled. (Lori Forte, BSA, personal comunication, Feb. 14, 1992.)

71 In its report "BSA Software Piracy Fact Sheet: Asian Countries, 1990," "BSA estimates that onty 3 percent of the software in Thailand is legitimate. By contrast, BSA's method produces a "135 percent" legitimacy figure for Singapore, so the method is somewhat inexact.

72 Damon Darlin, "U.S. Group Targets South Korea Firms for Unauthorized Copying of Software," *The Wall Street Journal, May 23, 1991,* p. B5.

73 "Soviet Software Pirates Are Plaguing Microsoft," *Business Week,* Mar. 5, 1990, p. 84A. According to press accounts, the most widely used program in the Soviet Government was Alpha-DOS, a copy of Microsoft's MS-DOS; the MS-DOS code was copied even down to Microsoft's copyright notice.

74 The agreement also included provisions for other copyrighted works and for patents. (Discussed in Jack E. Brown, abstract of presentation for intellectual property panel of *The Moscow Conference on Law and Bilateral Economic Relation,* Sept. 19, 1990, published in *Computer Industry Litigation Reporter,* Oct. *22, 1990,* pp. 12,074-12,083.)

comprehensive protection for trade secrets. A new law was in process, with a set of principles for software copyrights, but many considered them deficient in that authors were not given enforceable protections against piracy.[75] Copyright enforcement is still problematic in this area of the world-even before the breakup of the Soviet Union the more traditional types of works were widely copied, often for commercial use. For example, unauthorized copying of motion pictures on videocassettes—often, to be shown to paying audiences—has been so widespread that in June 1991, the major U.S. film studios decided as a matter of principle to stop licensing films for showings in what was then the Soviet Union.[76]

Piracy and Trade Issues

On February 15, 1991, the International Intellectual Property Alliance submitted a response to the United States Trade Representative's (USTR) January 11, 1991 *Federal Register* notice requesting comments under the Special 301 provisions of the 1988 Trade Act. (For a discussion of "Special 301," see box 3-B.) The IIPA supplemented its filing on April 18, 1991. In its filing, the IIPA requested that 22 countries (the People's Republic of China, India, Thailand, Indonesia, Mexico, Brazil, Greece, Philippines, Poland, Turkey, United Arab Emirates, Cyprus, Egypt, El Salvador, Germany, Italy, South Korea, Pakistan, Saudi Arabia, Taiwan, the then U. S. S. R., and Yugoslavia) be identified for their failure to protect U.S. intellectual property or for denying market access. The IIPA estimated that 1990 trade losses to the software industry due to software piracy in these countries exceeded $2.7 billion.[77]

In April 1991, the U.S. Economic Policy CounciI recommended to President George Bush that the United States formally cite the People's Republic of China (PRC), India, and Thailand under the Special 301 measure for tolerating violations of U.S. copyrights and patents in a number of industries, including pharmaceuticals, agricultural chemicals, sound recordings, motion pictures, book publishing, and software. The PRC was singled out for software-copyright violations. In its 1991 annual review of foreign trade barriers, the USTR found that PRC lacked a copyright law and that its proposed new law did not meet international standards.[78] The new regulations for software copyright, made public by the PRC'S Ministry of Machine Building and Electronics on June 13, 1991, took effect on October 1, 1991. However, according to the Office of the USTR, the new regulations have too many loopholes to be adequate from the perspective of foreign software developers. In particular, according to the Office of the USTR, the new regulations appear not to provide copyright protection for software developed prior to October 1, 1991.79

In late 1990, the United States opened a formal investigation of Thailand's enforcement of the Thai copyright law. The Special 301 investigation was prompted by a petition from the IIPA, Recording Industry Association of America, and Motion Picture Association of America, alleging massive piracy. The groups estimated that losses to U.S. industry from piracy of U.S. videos, audio cassettes, books, and computer software in Thailand was between $70 and $100 million in 1990.[80] The BSA has charged that 97 percent of the software in use in Thailand is pirated.[81]

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75 Article 4 of the *All Union Fundamentals of Civil Legislation* deals with software copyright; the *Fundamentals* provide the framework for all commercial law in the U.S.S.R. ("Soviets Recognize Copyrights," *Computerworld* (News Shorts), July 1, 1991, p. 80.)
Reviewer comments indicated that these provisions are considered inadequate and are being protested by the U.S. copyright industries and the USTR (Oliver Smoot, CBEMA, personal communication, June 28, 1991; Ronald Palenski, ADAPSO, *personal* communication July 10, 1991; Robert W. Holleyman and Lori Forte, BSA, personal communication, July 12, 1991).

76 Keith Bradsher, ' 'Hollywood Bars Films To Protest Soviet Piracy," *The New York Times,* June 12, 1991, pp. C13, C16.

77 Information on IIPA filing and estimate of piracy provided by Robert W. Holleyman and Lori Forte, BSA, personal communication, July 12, 1991.

78 Keith Bradsher, ''Panel Asks Bush To Cite 3 Nations,' *The New York Times,* Apr. 26, 1991, pp. Dl, D6.

79 James McGregor, ' 'China's New Software Protection Rules Are Called Inadequate by U.S. official, ' *The Wall Street Journal,* June 17, 1991, p. A7 (quoting Joseph Massey, assistant U.S. trade representative for China).

80 ''U.S. Launches Investigation of Thailand's Weak Enforcement of Copyright Legislation,'' *BNA International Trade Reporter* (News Highlights), vol. 8, Jan. *2, 1991,* p. *4.*

81 Andrew Jenks, ''As Software Piracy Spirals, Industry Cops Get Tougher, ' *Washington Technology,* June 13, 1991, p. 16; and BSA, ''BSA Software Piracy Fact Sheet: Software Piracy in Selected Asian Countries in 1990, "

Box 3-B—The Omnibus Trade Act and ''Special" 301

Under section 301 of the Trade Act of 1974, the United States Trade Representative (USTR) is authorized to identify, investigate, and retaliate against foreign countries engaged in unfair trade practices.[1] The USTR may initiate a section 301 investigation if a foreign country's act, policy, or practice is unreasonable or discriminatory and burdens or restricts U.S. commerce.[2] The statute enumerates trade practices that are unreasonable, citing as an example those which deny 'fair and equitable provision of adequate and effective protection of intellectual property rights. ''3 Any interested party may file a petition with the USTR requesting that action be taken under Section 301.

Subject to the direction of the President, the USTR is authorized to take action after the investigation. The USTR may: 1) suspend, withdraw, or prevent the application of, or refrain from proclaiming benefits of, trade agreement concessions; 2) impose duties or other import restrictions on the products of the foreign country under investigation; and/or 3) restrict, in the manner and to the extent appropriate, access to U.S. markets for services by denying or limiting licenses or other authority to provide services. The USTR must publish in the *Federal Register* its decision whether to investigate under section 301 and any contemplated action at the conclusion of an investigation. The USTR must hold public hearings on issues raised by petitions resulting in investigations and must consult with appropriate congressional committees on the decision to investigate or sanction a foreign country under section 301.

The Omnibus Trade and Competitiveness Act of 1988 (Public law 100-418) treats a wide range of subjects including granting negotiating authority to the President for the current world trade talks, giving a legal mandate for coordinating economic policies and exchange-rate strategies. It also grants the USTR increased surveillance of intellectual property protection in foreign countries. This measure, commonly referred to as ''Special 301, directs the USTR to identify:

1) those countries that deny adequate and effective protection of intellectual property rights[4] or deny fair and equitable market access to United States persons that rely upon intellectual property protection,[5] and

2) those foreign countries identified under paragraph 1 that are determined by the Trade Representative to be priority foreign countries.[6]

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1 19 U.S.C. 2411-2419.

2 19 U.S.C. 241 l(b).

3 19 U.S.C. 2411 (d)(3) (B) (i)(II).

4 19 U.S.C. 2241 (a)(l).

5 19 U.S.C. 2241(a)(l).

6 19 U.S.C. 2242(a)(2) through (b)(l).

The Berne Convention

The Berne Convention for the Protection of Literary and Artistic Works is a multilateral, international copyright treaty. The purpose of the Berne Convention is to bring nations together in an effort:

> . . . to protect, in as effective and uniform manner as possible, the rights of authors in their literary and artistic works.

The Convention attempts to achieve this objective through the principal of national treatment, which underlies the workings of the Convention.[82] Under the principle of national treatment, each member nation must give the same treatment to the nationals of the other member nations as it gives to its own nationals.[83]

Several secondary exceptions play a role in the Berne system.[84] These exceptions include recip-

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82 Paul Goldstein, Stella W. and Ira S. Lillick Professor of Law, Stanford Law School, personal communication, Sept. 20, 1991.

83 Mark L. Damschroder, "Intellectual Property Rights and the GAIT: United States Goals in the Uruguay Round, " *Vanderbilt Journal of Transnational Law, vol. 21, No. 2, 1988,* p. 379.

84 Paul Goldstein, Stella W. and Ira S. Lillick Professor of Law, Stanford Law School, personal communication, Sept. 20, 1991.

A priority country is defined in the amendments as one maintaining a large number and wide pervasiveness of practices which constitute significant barriers to U.S. exports and to foreign investment by U.S. persons.

The provisions of Special 301 requires the USTR to identify only those foreign countries with the most egregious practices of denying adequate and effective intellectual property rights or fair market access to U.S. persons relying upon intellectual property protection. The USTR must identify those foreign countries not entering into good faith negotiations or not progressing in ongoing negotiations whose practices have the greatest impact on relevant U.S. products. If the USTR determines that the investigation would harm U.S. economic interests, no investigation is required. The USTR must take into account information submitted by interested parties, so that a U.S. patentee may bring a complaint against a foreign country before the USTR and possibly involve the U.S. Government into negotiations for better protection.

The USTR must enter into consultations with the foreign country to negotiate a resolution to the trade dispute once an investigation under either section 301 or Special 301 is initiated. If the investigation involves a trade agreement, the USTR, under certain circumstances, must request formal dispute resolution under the agreement.

On the basis of these activities, the USTR must decide whether a U.S. right under any trade agreement is being denied or any act, policy or practice comes under section 301. If such an action is appropriate, the USTR must determine what action it should take. This determination must be made within 12 months after the date on which the investigation is initiated, within 18 months if the investigation involves a trade agreement's dispute resolution process. USTR has 30 days to implement its chosen course of action. The actions must be monitored and may be modified. USTR may terminate actions after 4 years if members of industry do not ask that they be continued. If such continuation is requested, USTR must study its potential effect.

A section 301 investigation into Korea's laws protecting intellectual property was instituted in 1985. Korea's law did not provide copyright protection for the works of U.S. authors and provided only limited patent protection for U.S. inventions. After discussions with the USTR, the Korean Government agreed to submit legislation to its National Assembly providing for comprehensive copyright protection for written works, sound recordings, and computer software. The Korean Government agreed to seek stronger patent laws and to join the Universal Copyright Convention.[7] India, the People's Republic of China, and Thailand were name "priority foreign countries" by the USTR in May 1991. An investigation was not conducted into the intellectual property laws and practices of Thailand, as that country was already the subject of two separate investigations based on complaints filed by the International Intellectual Property Alliance and the Pharmaceutical Manufacturer's Association.[8]

7 Albert C. Smith and John Sullivan, "The Impact of U.S. Patents and Customs on Importation.., " *The Computer Lawyer*, vol. 8, *No.* 10, October 1991.

8 Ibid.

SOURCE: OTA 1992, and cited footnotes.

rocity, establishment of minimum rights in the substantive clauses of the Convention, the principle of automatic protection, and the provision for making reservations.

Reciprocity alters the working of national treatment somewhat. The principle of reciprocity provides that a nation may limit the protection granted to a foreign national to that level bestowed upon its own citizens in the foreign nation of the person seeking its domestic protection. Thus, a member nation may treat foreigners as the foreigners' own governments would have treated them under similar circumstances. Reciprocity often results from political pressure from domestic interest groups who are receiving substandard protection in the foreign nation.[85]

The establishment of minimum rights in the substantive clauses of the Berne Convention and the principle of automatic protection work in tandem, giving authors and artists substantive protections

85 Damschroder, op. cit., footnote 83.

without a requirement of compliance with formalities.[86]

The provision for the making of reservations in article 27 of the Berne Convention allows member nations to make reservations to the introduction of new rights where such reservations are required by the domestic laws. The reservations may later be withdrawn when domestic law is brought into line with Berne.[87]

Article 2 of the Berne Convention defines what is included within the subject matter of protection under the Convention. Certain categories of works, among them books, pamphlets, addresses, choreographic works and sculpture: are explicitly included subject matter. Berne specifies that the scope of protection of other works should be defined by domestic law of each individual member country of the Berne Union. The Berne Convention does not address computer programs and databases, largely because the Convention was most recently revised in 1971, when computer technology was not so prevalent. It has been suggested that because computers are not mentioned, much confusion exists as to the interpretation of the current text with respect to these works of new technology. However, under Berne, there appears to be no written obligation to protect computer programs.[88]

The United States acceded to the Convention on March 1, 1989. At that time, the United States was already a member of the Universal Copyright Convention (UCC). Both groups are administered by United Nations agencies: Berne by the World Intellectual Property Organization (WIPO), and the UCC by the United Nations Educational, Scientific and Cultural organization (UNESCO) (to which it had already been a party for many years). To implement its accession, it was necessary for the United States to pass domestic legislation that created the most significant changes to the U.S. copyright law since 1976.[89] The Berne Convention was originally adopted to apply to works traditionally subject to copyright. Since then, new advances in technology required that copyright protect works in addition to art and literature. New technologies such as software and databases, international in nature because of the ease with which they can be copied and disseminated across national boundaries, have made international copyright protection and the changes rendered by U.S. adherence in Berne at least as important as domestic copyright protection.[90]

As required by article 36 of Berne, the United States made changes in its copyright law to make its law compatible with the treaty by passing the Berne Convention Implementation Act of 1988. Some of these changes bear on Congress' options to treat software differently from other kinds of copyrighted works. Among these changes are the following:

1. *Abolition of mandatory notice of copyright*—Notice of copyright, traditionally indicated in the United States by the symbol ©, the year of publication, and the author's name, is no longer required for works first published on or after March 1, 1989. Failure to place a notice of copyright on copies or phonorecords of such works can no longer result in loss of copyright. This abolition of the notice requirement is not retroactive, and voluntary use of the notice is still encouraged. If notice does appear, it limits a defense of innocent infringement.[91]

86 Ibid. Some concern has been expressed that adoption by the United States of the Berne Convention, which has eliminated the need even to place copyright notices on published material, has raised the issue of whether and to what extent a public disclosure system should be required for software copyright protection. Some assert that under existing copyright law and practice it is impossible for a legitimate software developer to conduct a due diligence process, as the scope of existing protection is not available in any public form since a copyright claimant can delay filing any public record until after an alleged infringement has occurred. This contrasts with current patent law and practice, whereby an applicant for a patent is required to specifically claim the elements to be protected. Those claims, if allowed, become of public record. Subsequent inventors can use those records as part of their due diligence to determine whether a proposed development will infringe existing rights. These observers raise the question whether, and to what extent, a similar practice should be required of software copyright claimants. Thomas E. Kirkland, Vice President and General Counsel, Microelectronics and Computer Technology Corporation, personal communication, Sept. 24, 1991.

87 Ibid.

88 Carol A. Motkya, "Impact of U.S. Adherence to the Berne Convention," *Rutgers Computer & Technology Law Journal,* vol. 16, 1990, pp. 195, 213-215.

89 The Berne Implementation Act expressly states that the Berne Convention is not self-executing in the United States and that it is not an independent source of right in the United States, though it is in other countries, Thus, copyrighted works receive protection under domestic U.S. copyright law as amended by the Berne Act, rather than by direct enforcement of the provisions of the Berne Convention itself,

90 Motyka, op. cit., footnote 88 at p.195.

91 U.S. Copyright office, The *United States Joins the Berne Union*, Circular 93a (Washington, DC: U.S. Government Printing office, 1989), p.4.

2. *Mandatory* deposit-Copyright owners must deposit in the Copyright Office two complete copies or phonorecords of the work subject to copyright that are publicly distributed in the United States, whether or not the work exhibits a notice.[92]
3. *Registration-Berne* brought about a two-tier registration system that differentiates between works of U.S. origin and works of foreign origin with regard to registration.[93] Under 17 U.S.C. 41 l(a), authors or works whose origin is not the United States are exempt from the requirement to register in order to bring an infringement action. However, works of U.S. origin must be submitted to the Copyright Office for registration before suit can be brought. This domestic requirement for registration can be problematic for databases, which are copyrightable under limited circumstances. Registration requirements for active databases are complex because such databases are being revised continually.
4. *Compulsory* licenses—Article 1l(l)(i-ii) of Berne grants authors of literary works the exclusive right of authorizing public recitation of their works and communication to the public of the recitation of their works. This provision had an immediate effect upon U.S. law in 17 U.S.C. 116, wherein the right to publicly perform music by means of a jukebox was the subject of a compulsory license. The Berne Implementation Act amended the law to provide for negotiated licenses between jukebox operators and copyright owners, so that such negotiated licenses take precedence over compulsory licenses.[94] From a broader perspective, this provision precludes the use of compulsory license for any literary works. Thus, compulsory licenses cannot be applied to computer programs, as these are considered under U.S. law to be literary works.
5. *Duration of protection-The* Berne Convention establishes the minimum terms of protection that must be provided by member countries. The general term of protection is life of the author plus 50 years following the author's death.[95] Special minimum terms are indicated for certain categories of works. As a result, a term of protection for computer software less than the life of the author plus 50 years is precluded by U.S. adherence to Berne.

The General Agreement on Tariffs and Trade

The General Agreement on Tariffs and Trade (GATT) is a multilateral trade agreement, entered into force in 1948, intended to promote freer trade among member countries. The GAIT is the main instrument regulating trade among market economy nations of the world. The obligations contained in the the original text of the GATT' have been augmented and changed periodically at the prompting of its signatories, most recently during the Tokyo Round of negotiations from 1973 to 1979. Procedures under the GATT "provide for extensive exchanges of information, regular review of key subject areas and *ad hoc* consultations on particular concerns. " The GATT's dispute settlement procedure is the last resort for governments involved in a trade dispute. This procedure is termed the "panel procedure, ' and consists of third-party adjudication of claims .96

A new round of negotiations under the GATT was begun in 1986, and was originally scheduled to end in December of 1990 (see box 3-C). Because the agenda for the talks was set at Punta del Este, Uruguay, this round of negotiations is referred to as the Uruguay Round. During the round, negotiators undertook to improve and strengthen the existing GATT structure and to extend the rules of the GATT to aspects of international trade that remain largely outside the discipline of the GATT The United States was successful in making intellectual property rights, as well as other matters, a part of the negotiations.[97] Currently the GATT contains no specific express provisions for protection of intellectual property rights. While an important U.S. goal

92 Ibid.

93 Ibid.

94 *The United States Joins the Berne Union,* op. cit., footnote 9, pp. 4-5.

95 The Berne Convention for the Protection of Literary and Artistic Works, Paris Act of July 24, 1971 as amended on Oct. 2, 1979, article 7(1), World Intellectual Property Organization (Geneva 1987).

96 Damschroder (1988), op. cit., p. 384.

97 Ibid., p. 372.

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Box 3-C—History of the Uruguay Round

The Uruguay Round of' the General Agreement on Tariffs and Trade (GATT) negotiations is the eighth round of multilateral trade negotiations and may be the most comprehensive and significant in the GATT's history.[1] In addition to improvement of existing GATT articles and inclusion of trade-related aspects of intellectual property rights, the United States succeeded in including the following subjects in the Uruguay Round negotiations: 1) greater liberalization of the agriculture policies of member nations; 2) trade-related investment measures; 3) trade in services; and 4) modification and strengthening of the GATT's dispute settlement mechanisms.[2]

In December 1988, a mid-term review began in Montreal to assess progress made during the first half of the Uruguay Round and to arrive at framework agreements on work over the remaining 2 years. Disagreement on agriculture delayed the conclusion of the mid-term review until April 1989, when negotiators met in Geneva to approve the set of mid-term agreements.[3]

Negotiators set July 1990 as the deadline for final draft framework agreements. These agreements were expected to show the broad shape of the final package. Instead, in July negotiators remained far apart on most major issues. The absence of consensus correctly indicated that the final months of negotiations would be intense and difficult.[4] Since the breakdown of the talks in early December 1990, the European Community put forward proposals for reforming the common agricultural policy. As discussed previously, talks held in Geneva January 31 through February 2, 1991 were aimed at producing a platform for restarting the round, according to GATT Director General Arthur Dunkel.[5]

The Congress oversees the negotiations and the Bush administration is required to consult with Congress during negotiations and prior to entering into an agreement. The President will submit the eventual agreement package and implementing legislation to the Congress when it is 'agreed upon by negotiators. Under the fast-track approval procedure, Congress must take an up-or-down vote on the legislation within 60 days after the President submits the legislation (90 days in the case of an implementing revenue bill).[6]

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1 Mark L. Damschroder, "Intellect Property rights and the GATT: United States Goals in the Uruguay Round," *Vanderbilt Journal of Translational Law*, vol. 21, No. 2, 1988, p. 390.

2 "The General Agreement on Tariffs and Trade," memorandum of Ernst& Young, Washington, DC Office, July 1990.

3 Lenore Sek, Trade *Negotiations: The Uruguay Round*, Congressional Research Service, Issue Brief No. IB86147, p. 3.

4 Ibid., at p. 4.

5 "Free Trade Talks Imperiled by Fight on Farm Subsidies," *The New York Times, Nov.* 13, 1990.

6 Ilona *B.* Nickels, Trade Agreement Legislation on a "Fast Track," CRS *Review*, May-June, 1990, pp. 11-12; see also Sek, op. cit., footnote 251 at p. 11.

SOURCE: OTA, 1992.

during the Uruguay Round is to develop better international standards for protection of intellectual property rights and to establish dispute settlement and enforcement procedures in the GATT, there is a significant portion of the membership of the GATT', particularly the Third World, that opposes the inclusion of intellectual property rights into the instrument. Certain developing countries, led by India and Brazil, question whether the GATT is an appropriate forum and prefers that such discussion take place in the World Intellectual Property Organization, a treaty administered by the United Nations that lacks any dispute settlement provision. Some believe that the effectiveness of the intellectual property provisions in the GATT will depend in large part upon the enforcement provisions of the GATT treaty .98

The talks collapsed on December 7, 1990, when the United States, along with most of the other participating countries, and the European Community failed to agree at a ministerial meeting in Brussels on ways to revamp agricultural trade. After the breakdown in negotiations, the Uruguay Round was originally extended into the first few months of 1991. GAIT Director General Arthur Dunkel met separately with representatives of the EC, the United States, Japan, and the Cairns Group of agricultural

98 Damschroder, op. cit., footnote 83, at 390.

producing countries January 31 through February 1, 1991 in an effort to find some common ground for resuming the formal Uruguay Round in February.

In light of the lack of results of these consultations, most delegates expected that the Uruguay Round would continue through the summer, if the U.S. administration could obtain from Congress an extension of its "fast-track" negotiating authority (see box 3-D). Indeed, the Bureau of National Affairs reported that Dunkel obtained the agreement of most major players in the Uruguay Round of trade negotiations to have the talks extended at least through the end of 1991. U.S. Trade Representative Carla Hills had stated that she was hopeful that Congess would approve an extension of the administration's fast-track authority beyond June 1, while some lawmakers, including Senator Max Baucus, chairman of the Senate Finance Subcommittee on International Trade, indicated that the subcommittee would oppose extending the authority for the Uruguay Round without some evidence of significant progress toward successful completion of the round. President Bush formally requested an extension of the fast-track implementation legislation on March 1, 1991. Following the lead of the House of Representatives, the Senate voted to extend the fast-track negotiating authority for 2 years.[99]

The U.S. Trade Representative

The Office of the U.S. Trade Representative, an agency of the Executive Office of the President, is the body involved in the GATT negotiations on behalf of the United States. The process by which the USTR arrives at treaty proposals such as those for the GATT is not a highly visible one.[100] The statutory basis for the process is set out in 19 U.S.C. 2155, which provides that the president must seek information and advice from representative elements of the private sector and the nonfederal government with respect to negotiating objectives and bargaining positions before entering into a trade agreement. To effect such communication between the executive branch and the private sector, the statute provides for the establishment of an Advisory Committee for Trade Policy and Negotiations to provide overall policy advice on these matters. This broadly based committee is made up of representatives of nonfederal governments, labor, industry, agriculture, small business, service industries, retailers, and consumer groups. The committee is to be representative of the key sectors and groups of the economy, especially those affected by trade. Members are recommended by the USTR and appointed by the President.

The statute also provides for the establishment of individual general policy advisory committees for these same interest groups to provide general policy advice. These committees are organized by the USTR and the Secretaries of various executive departments, and are to meet at the request of the USTR and the Secretaries of the executive departments to provide policy advice, technical advice, and information.

Negotiators at USTR meet with parties concerned with the negotiations, including the White House and pertinent government agencies (in this case the Copyright Office, the Department of Commerce, the Department of State, or the Patent and Trademark Office, *inter alia),* as well as with industry representatives, on both a formal and informal basis.[101] In some cases a specific call is made for public comment, in other instances the USTR seeks out key players it believes to have a stake in the negotiations.[102] Congress' role, as discussed above, is to monitor USTR'S activities, to act as a source of advice and consultation, and to hold public hearings on issues critical to the negotiations.[103] Some sources assert that the treaty implementing legislation is essentially written by the Congress and the

99 "Brussels Meeting To Conclude Uruguay Round in Jeopardy, Director General Dunkel Warns," *International Trade Reporter, vol. 8, No, 22,* May 29, 1991, p. 802.

100 Personal communications with officials of the Office of the U.S. Trade Representative, the Department of Commerce, and the U.S. International Trade Commission September 1990 to November 1990.

101 Eliza Patterson, Deputy Director, External Affairs, International Trade Commission, personal Communication, Aug. 13, 1990.

102 Emery Simon, Office of U.S. Trade Representative, personal communication, September 1990.

103 Patterson, op. cit., footnote 101.

Box 3-D—Role of the Congress in Trade Negotiations and the Fast-Track Implementation Procedure

The Administration and Congress have interactive roles in the negotiation of trade agreements. Under his constitutional powers to negotiate international agreements and to conduct international relations, the President has certain power to negotiate on trade matters. Congress has constitutional authority to regulate foreign commerce. The President may negotiate trade agreements, but if those agreements require a change in the law, the Congress must approve the statutory changes.

Congress has traditionally delegated some of its authority to the President for past rounds of multilateral trade negotiations. The Trade Act of 1974 (Public Law 93-618) authorized the President to agree to certain matters during the Tokyo Round. The U.S. Government implemented the Tokyo Round agreements by enacting the Trade Agreements Act of 1979 (Public Law 96-39).

The President began negotiations in the Uruguay Round without congressionally delegated authority. At the time, however, the Congress was considering legislation to extend negotiating authority to the President and subsequently approved authority under Public Law 100-418, the Omnibus Trade and Competitiveness Act of 1988 (1988 Trade Act).

The 1988 Trade Act designated negotiating objectives, which gave congressional direction to the U.S. negotiator. It listed specific objectives on 16 subjects, including intellectual property. The 1988 Trade Act also extended the President's authority to enter and proclaim certain tariff and nontariff agreements, imposed limits on tariff reductions, and provided for fast-track approval procedures for certain agreements, as well as congressional withdrawal of fast-track consideration ("reverse fast-track").

The fast-track approval procedure ensures that as long as the Administration has consulted adequately with Congress prior to and during negotiations and has negotiated an agreement consistent with congressional directives, then Congress quickly and without amendment will consider and vote on the agreement and implementing legislation as submitted by the Administration. This fast-track procedure is an exercise of the constitutional rulemaking power of the House and the Senate. Either House of the Congress may change these procedures in the same way that it may change any of its rules. The 1988 Trade Act provides that Congress may also terminate the fast-track procedure. Such a change or termination of the fast-track procedure would signal a lack of congressional support for the agreement.

executive branch, including the USTR, together.[104] The perception exists, however, that the USTR has not involved the Congress as fully as would be considered appropriate.[105] Indeed, the fast-track procedure for passage of implementing legislation relies upon congressional awareness and participation throughout the negotiation and drafting process.[106]

Trade-Related Aspects of Intellectual Property Rights and the U.S. Proposal to the GATT

That portion of the GATT negotiations concerned with intellectual property is referred to as TRIPs, Trade Related Aspects of Intellectual Property Rights. Part Two of the U.S. Trade Representative's Draft Agreement on TRIPs, entitled "Standards in the Field of Intellectual Property,' provides specifically for protection of computer software as a literary work under its copyright provisions. The Berne Convention forms the basis for protection set forth in the GATT proposal.[107] Article 1 of these standards establishes that the Berne Convention provides the minimum economic rights to be granted to authors by contracting parties to the GATT'. Articles 2 through 7 set forth the additional protections provided specifically for computer software and databases in the TRIPs. The more controversial aspects of the U.S. draft agreement are discussed below.

104 Ginger Lew, Ernst & Young, Washington, DC, personal communication, Aug. 9, 1990.

105 Testimony of the U.S. Trade Ambassador Carla Hills before the U.S. House of Representatives Subcommittee on Intellectual property and Judicial Administration, hearing on Intellectual Proprety and International Issues, May 15-16, 1991.

106 Patterson, op. cit., footnote 1101.

107 Lewis Flacks, Policy Planning Advisor to the Register of Copyrights, personal communication, Aug. 7, 1990.

As part of the required consultation with Congress, the President must meet and consult with the appropriate committees during negotiations and prior to entering into an agreement. At least 90 days before entering into an agreement, the President must notify the House and the Senate of the intention to enter into the agreement and must publish notice of such intention in the *Federal Register.*

After entering into an agreement, the President must submit a document to the House and the Senate containing a copy of the final legal text of the agreement. The document also must contain: 1) a draft of the implementing bill, 2) a statement of any administrative action proposed to implement the agreement, and 3) supporting information as described by law.

Under the fast-track approval procedure, Congress must take an up-or-down vote on the implementing legislation within 60 days of session after the President submits the legislation (within 90 days in the case of an implementing revenue bill):

- The implementing bill submitted by the President must be introduced in each House of the Congress on the same day that a trade agreement is submitted to the House and the Senate. The bill is referred jointly to the appropriate committees.
- The committees have 45 days to report the implementing bill. At the end of the 45 days, if the committees have not reported the bill, they are discharged from further consideration. The bill is placed on the appropriate calendar.
- Within 15 days of session after the committees report the bill or are discharged from further consideration of the bill, a floor vote must be taken in each House of Congress. No *amendments may be made and debate is limited.*
- *If* it is an implementing revenue bill, the bill must originate in the House of Representatives. After the bill is received in the Senate from the House, it is referred to the appropriate Senate committees. The Senate committees have 15 days in which to report the bill, otherwise the committees are discharged from further consideration. A vote in the Senate shall be taken within 15 days after the committees report the bill or after the committees are discharged from further consideration of the bill.

SOURCE: Lenore Sek, Trade *Negotiations: The Uruguay Round,* Congressional Research Service, Issue Brief No. IB86147, p. 3.
Ilona B. Nickels, Trade Agreement Legislation on a "Fast Track" *CRSReview,* May-June, 1990, pp. 11-12.

Article 2

Article 2 attempts to define the scope of protection for computer-related works. Section (l)(a) provides for protection of computer programs, which, under the provisions, include "application programs and operating systems. " Section (l)(a) further provides that computer programs may be expressed in any language, including source and object code, and that these are to be protected as literary works. Section (l)(a) also provides for protection of works created by or with the use of computers.

Protection of computer programs in source and object code are the subject of article 2, section (l)(a). This provision essentially incorporates the provision of section 101 of the U.S. Copyright Act, Title 17, U.S.C. 101 regarding the treatment of computer programs and databases as literary works [108] and codifies the outcome of litigation in the American courts dealing with these issues. [109] It provides that both the source and object code of computer programs, as well as operating and application systems, are the subject of protection.

It has also been suggested that the language of article 2, section (l)(a) that states that ''all types of computer programs. . . expressed in any language. . ." should be noted as being potentially construable to include algorithms and source code languages. This

108 Title 17, sec. 101 provides in pertinent part that "literary works'' are:

> . . . works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of material objects, such as tapes, disks, or cards, in which they are embodied.

Melville Nimmer states that this statutory definition is broad enough to include computer databases and programs. This issue is further discussed in the analysis of the Apple decision, ch. 2.

109 For further discussion of U.S. case law pertinent to the protection of computer programs, see the discussion of *Apple v. Franklin, as* well as other relevant cases, ch. 2.

is especially pertinent in light of the recently adopted European Community software directive,[110] which may not specifically preclude protection of algorithms and computer languages.[111] Works created by or with the use of computers are granted protection under article 2, section (l)(a) of the U.S. TRIPs proposal.[112]

The compendium of the U.S. Copyright Office explains that the term ''authorship' in the copyright law:

> implies that, for a work to be copyrighted, it must own its origin to a human being.

To determine whether works created by computers are works of authorship within the meaning of the 1976 Copyright Act, a distinction must be made between computer-aided works and computer-generated works. Computer-aided works, works generated with the aid of a computer, are entitled to the same copyright treatment as other works created with the more traditional implements of human authorship. However, if and when artificial intelligence makes it possible for new works to be generated by a computer alone and not merely with its assistance, new questions will be presented. To date, there are no cases on computer-aided or computer-generated works. When the National Commission on New Uses of Technological Works (CONTU)[113] considered the question, it believed that there was "no reasonable basis for considering that a computer in any way contributes authorship to a work produced through its use. ' CONTU concluded that:

> . . . no special problem exists with respect to the ''creation of new works by the application or intervention of such automatic systems or machine reproduction'; that existing statute and case law adequately cover any questions involved; and that no action by Congress is necessary at this time.[114]

This finding by CONTU effectively deferred consideration of the problem of computer-generated works, and focused exclusively on the question of computer-aided works. CONTU examined a number of issues with respect to the issue of computer-aided works.[115]

First, it asked whether a computer-aided work is an ''original work of authorship' within the meaning of the Constitution and the current statute. CONTU expressed the view that the intervention of a computer should not affect the copyrightability of any work, noting that the quantum of originality needed to support a claim of authorship in a work is small. ' Although computers may be used to:

> . . . produce writings that lack the degree of originality held necessary to copyright, [still] the criteria that determine if a work is sufficiently original to qualify for copyright are already well established, and the intervention of the computer should not affect them,

CONTU compared a computer to a camera in its ability to extend human power rather than substitute for it, A computer-aided work is no less a work of human authorship than a work created by the aid of a camera, a typewriter, or any other ' 'inert instru-

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110 The European Economic Community Treaty and the European Community Council directive on the legal protection of computer programs are discussed later in this chapter.

111 Jerome Reichmann, Vanderbilt University, personal communication, Aug. 9, 1990. The Council Directive on the legal protection of computer programs (91.250 .EEC) provides in article 1, section 2:

> Protection in accordance with this Directive shall apply to the expression in any form of a computer program. *Ideas and principles which underlie any aspect of a program including its interfaces, shall not be protected by copyright under the Directive.* (Emphasis added.)

This section differs from a prior iteration, which provided:

> protection in accordance with this Directive shall apply to the expression in any form of a computer program but shall not extend to the ideas, principles, logic, algorithms or programming languages, underlying the program. Where the specification of interfaces constitutes ideas and principles which underlie the program, those ideas and principles are not copyrightable subject matter.

Other commentators are uneasy with such a conclusion that the EC directive does not, as a result of this language, include an express exclusion of ''algorithms'' from copyright. It should be noted in light of the language of the directive that Japan, as well as several other countries, have adopted express exclusions for algorithms from copyright protection, Raymond Nimmer, Professor of Law, University of Houston Law Center, personal communication, Sept. 23, 1991.

112 For further discussion of treatment of works created by or with the use of computers, see Pamela Samuelson, ''Allocating Ownership Rights In Computer-Generated Works, " *University of Pittsburgh Law* Review, vol. 47, p. 1185.

113 For further discussion of CONTU and its activities, see ch. 2.

114 *Final Report of the National Commission On New Technological Uses of Copyrighted Works*, July 1978 (Washington, DC: The Library of Congress, 1979), p. 46.

115 Ibid.

ment' which is ''capable of functioning only when activated either directly or indirectly by a human. [116]

Second, CONTU addressed the question of who is the author of a computer-aided work. CONTU determined that "the obvious answer is that the author is one who employs the computer. ' Where a number of people have been involved in using the computer to prepare a complex program or database the author may be a common employer of the programmer under the work-made-for-hire doctrine. On the other hand, a team of independent programmers might be joint authors, and they can define their relative rights by agreement. [117]

Some commentators believe that this provision reflects the status of the law in the United States, and that foreign jurisdictions generally agree that such protection is appropriate. Others believe that the area has not yet been examined by the courts, and is therefore not yet ripe for negotiation in the GATT.[118]

Databases are protected under section (1)(b) of article 2:

> . . . if they constitute intellectual creation by reason of the selection, coordination, or arrangement of their contents.

While this issue has also been addressed in the U.S. courts, little consensus on the issue had been reached until a recent decision by the U.S. Supreme Court.[119]

Section 2 (a) of' article 2 of the TRIPs proposal delineates economic rights provided to contracting parties that are over and above those minimum rights provided for in Berne. The rights provided in this section closely mirror those rights set forth in section 337 of the Trade Act of 1974 and section 602 of the Copyright Act. These include the right to import into the territory of the contracting party lawfully made copies of the copyrighted work, and the right to prevent the importation of unauthorized copies,

Article 2, section 2(b) of TRIPs deals with the issue of rental rights in computer programs, an issue recently considered by the U.S. Congress, which passed legislation in November 1990 (Public Law 101-650, section 801-805). Section 2(b) states that the first sale of the original or a copy of a computer program shall not exhaust the rental or importation right in the computer program. The provision defines "rental right' as the right to authorize or prohibit the disposal of the possession of the original or copies for commercial advantage. This provision reflects the substance of legislation recently passed.[120]

This TRIPS provision, like the U.S. legislation, limits the first sale doctrine, embodied in 17 U.S.C. 109. The first sale doctrine permits the owner of a lawfully made copy of a copyrighted work to sell or otherwise dispose of the possession of that copy without the permission of the copyright owner. The provision and the legislation are a response to the computer software industry's concern about the rental of its works and the ease with which they can be copied.

Among the justifications for this limitation of the first sale doctrine is the argument that computer programs, unlike movie videos, cannot realistically be rented for an evening's entertainment and then returned. It is argued that the various commands and features require study and understanding of users manuals, and many programs have no real value until the user enters their own database. [121] The industry asserts that unchecked rental of software and its unauthorized copying feeds on itself, since copying drives the price of software up and makes the incentive to pirate greater, It has been asserted, however, that rental restrictions could interfere with the practice of ''trial rentals," which would limit consumer information and potentially reduce sales. 122

The issue of software rental has garnered significant attention internationally. The directive of the Council of the European Economic Community on the legal protection of computer programs includes

116 Ibid.

117 Ibid.

118 Jerome H. Reichman, Professor of Law, Vanderbilt University, personal communication, Aug. 9,1990.

119 For further discussion of protection of databases under U.S. law, see ch. 2.

120 For additional discussion of the issue of rental rights and the enacted legislation, see ch. 2.

121 Testimony of Ralph Oman Register of Copyrights Hearing of the House Subcommittee on Courts, Intellectual Property, and the Administration of Justice, July 30, 1990.

122 Ibid.

a provision to allow authors to retain rental rights in their software after its first sale.[123]

Draft Final Act Embodying the Results of the Uruguay Round and Trade-Related Intellectual Property

On December 20, 1991, GATT Director General Arthur Dunkel tabled the "Draft Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations. ' This draft was issued with the understanding that it offered a concrete and comprehensive representation of the final global package of the results of the Uruguay Round, that no single element of the draft could be considered as agreed upon until the total package is agreed, and that final agreement on the draft act would depend upon achievement of meaningful results for all parties in ongoing negotiations pertaining to access to markets and in liberalization commitments in the area of services. The draft discussed copyright and related rights, including provisions for computer programs and compilation of data.

According to article 9 of the draft, parties to the agreement are required to comply with articles 1 to 21 and the Appendix of the Berne Convention, with the exception of article *6bis* of the Convention which deals with moral rights of authors. Further, the draft states that copyright protection shall extend to expression and not to ideas, procedures, methods of operation or mathematical concepts.

Article 10 provides that computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention. Compilations of data or other material, whether in machine readable or other form, which are intellectual creations because of the selection or arrangement of their contents are entitled to protection, without prejudice to any copyright subsisting in the data or material itself.

Article 11 provides that with respect to computer programs, authors shall be provided the right to authorize or prohibit the commercial rental to the public of originals or copies of their copyrighted works. This obligation does not apply to rentals where the program itself is not the primary purpose of the rental.

Article 12 provides for a term of protection for computer programs of 50 years from the end of the calendar year of authorized publication, or absent such authorized publication within fifty years from the making of the work, fifty years from the end of the calendar year of the making.

Article 13 of the draft agreement provides that parties to the agreement ''shall confine limitations or exceptions to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interest of the right holder."

Earlier in the text, the Draft also sets forth "Measures in Favor of Least-Developed Countries,' which would affect the application of the computer software provisions to least-developed countries that are signatories to the GATT. Under these provisions, parties to the agreement recognize the plight of the least developed countries and their special needs with respect to effective participation in the world trading system, especially in the area of market access. It states that least-developed countries, recognized as such by the United Nations, will be required to apply the terms of the agreement only to the extent consistent with their individual development and capabilities.

This portion of the draft also states that parties to the agreement agree that expeditious implementation of measures taken in favor of least-developed countries shall be ensured through regular reviews, and that least-developed countries are to be accorded increased technical assistance in the development, strengthening and diversification of their production and export bases to enable them to maximize the benefits from liberalized access to markets. They further agree to keep the problems of these countries under review and adopt positive measures which facilitate the expansion of trading opportunities in favor of these countries.

Participation by the United States in Other International Treaties

In addition to its participation in such multilateral treaties as the Berne Convention, and the General Agreement on Tariffs and Trade,[124] the United States is a party as well to many bilateral treaties

[123] Council Directive of May 14, 1991 on the legal protection of computer programs (91/250/EC), art. 4(c).

[124] The GATT and U.S. proposals for trade-related intellectual property rights are discussed earlier in this chapter.

with individual nations in which provisions for intellectual property protection for computer software are specifically laid out. In large part, the bases for these bilateral treaties are the provisions of the Berne Convention. Most recently, the United States has established such bilateral treaties with the then Soviet Union, Romania, Czechoslovakia and other emerging Eastern European countries.[125]

Also, as discussed above, the United States is a party to the Universal Copyright Convention (UCC), which was created in 1952 by UNESCO to provide an alternative multilateral agreement to Berne which would not require the United States and other Western countries to forfeit copyright notice requirements. While the UCC prohibits member states from requiring formalities as a prerequisite for copyright protection, the UCC differs from Berne by dispensing with those formalities only upon use of a prescribed copyright notice. The UCC grants priority to the Berne Convention, making it the premier multilateral copyright treaty with the highest standards of protection, followed by the UCC.[126]

The European Economic Community's Directive on Legal Protection for Computer Software

The Council Directive

On May 14, 1991, following its 1988 Green Paper (see box 3-E), the European Community adopted its extensively debated Council Directive on the legal protection of computer programs.[127]

Preamble

The preamble of the Council Directive asserts the varying nature and scope of protection afforded to computer software among member states and the negative consequences of these differences on the functioning of the European Common Market.[128] This section emphasizes the investment of human, technical and financial resources in development of computer programs, the increasingly important role played by computer programs in a broad range of industries and the resulting fundamental importance of computer software to the European Community's industrial development.[129] It also asserts that differences in protection which have negative effects on the operation of the Common Market must be eliminated, and sets forth copyright law as the European Community's legal framework for the protection of computer programs.[130] The European Community's commitment to the promotion of international standardization is emphasized.[131] The prologue initially makes reference to the issues of idea/expression dichotomy, reverse engineering, limited rights of the owner of software to copy, and the copyrightability of logic, algorithms and programming languages (see discussion above). *32 The prologue establishes the term of protection for computer programs as the life of the author and 50 years from the authors' death.[133]

Article l—Object of Protection

Under article 1, computer programs are protected as literary works within the meaning of the Berne Convention for the Protection of Literary and Artistic Works.[134] Protection applies to the *expression* of a computer program. Underlying ideas and principles, including those that underlie its interfaces, are not protected by copyright under the directive.[135] According to the directive, a computer program is eligible for protection if it is original in the sense that it is the author's own intellectual creation. No other criteria are to be applied.[136]

125 Eric Schwartz, Policy Planning Advisor to the Register of Copyrights, personal communication Apr. 30, 1991.

126 Melville B. Nimmer, *Nimmer on Copyright (New* York, NY: Matthew Bender, 1988), sec. 17.01 [B].

127 For further discussion of the European Economic Community Treaty and the procedure by which the EC arrives at legislation such as the directive discussed in this chapter, see app. A.

128 Council Directive of May 14, 1991 on the legal protection of computer programs (91/250/EC).

129 Ibid,

130 Ibid.

131 Ibid,

132 Ibid.

133 Ibid.

134 Ibid., art. 1, sec. 1.

135 Ibid., sec. 2.

136 Ibid,, sec. 3.

Box 3-E—The Green Paper on Copyright and the Challenge of Technology: Copyright Issues Requiring Immediate Action

On June 7, 1988, the Commission of the European Communities issued a "Green Paper on Copyright and the Challenge of Technology--copyright Issues Requiring Immediate Action. "[1] This paper analyzes various issues concerning the copyright law, suggests legislative and technical solutions, and invites comments on the subjects discussed. Chapter 1 of the Green Paper considers the emergence of important copyright issues at the European Community level, the Community's general concerns about the state of copyright protection, and the Community's powers under the European Economic Community Treaty in relation to copyright goods and services.[2]

The Green Paper then addresses six focus areas:

1. piracy,
2. audio-visual home copying,
3. distribution and rental rights,
4. the legal protection of computer programs,
5. the legal problems and protection of databases and their operation, and
6. the role of the European Community in multilateral and bilateral external relations.[3]

This box highlights those sections relevant to the computer software industry.

Chapter **1: Copyright and the European Community**

Chapter 1 considers the emergence of important copyright issues at the Community level. The Commission expresses its concern that intellectual property has so far been dealt with by national law and has been neglected at the EEC level.[4] in the opinion of the Commission, the Community must provide for proper functioning of the Common Market to provide creators and suppliers of copyrighted goods and services with a single internal market.[5] The paper highlights the need to reconcile protection of the economic interests of the author and other creators, the promotion of ready access to information, and the pursuit of cultural goals.[6] Copyright law and policy are believed by the Commission to be means to pursue and accomplish these goals.[7] The Green Paper also outlines the growing importance of copyright to industry and commerce, as well as the importance of the market for goods and sew ices protected by copyright to the health of the European Community economy.[8]

The paper focuses on four fundamental concerns regarding copyright protection. First, the Commission states that it is important that the Community ensure the proper functioning of the Common Market, so that creators and providers of copyright goods and services are able to treat the Community as a single internal market. This would require elimination of obstacles and legal differences that disrupt the functioning of the market by obstructing trade and distorting competition. Second, the Community should, according to the Commission, develop policies to improve the competitiveness of its economy in relation to its trading partners. In addition to product-oriented measures, the paper suggests that the Community take legislative measures regarding intellectual property to ensure that European creators and firms can rely on legal protection for their products that is at least as favorable to their development as that granted by their principal competitors in their home markets. Third, steps must be taken to ensure that intellectual property resulting from creative effort and substantial investment with the Community is not misappropriated by non-EEC countries. The Commission believes that action should be taken by the Community to ensure a fair return from the exploitation of intellectual property by nonmember states. Finally, the interests of third parties and the public must be considered.[9]

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1 Commission of the European Communities, ''Green Paper on Copyright and the Challenge of Technology—Copyright Issues Requiring Immediate Action,'' Communication from the Commission Brussels, 7 June 1988, COM (88) 172 final.

2 Ibid., pp. 10-18.

3 Ibid., chs. 2-7.

4 Ibid., p. 10

5 Ibid., p. 12.

6 Ibid., p. 10.

7 Ibid.

8 Ibid., pp. 11-12.

9 Ibid., pp. 12-14.

Chapter 5: Computer Programs

In Chapter 5 the Commission outlines the importance of the computer software industry to the Community's economy and industrial and technological future, and examines the present status of the computer industry in the Community.[10] Chapter 5 also addresses many problems encountered under the existing law applied to computer programs and urges that action be taken to provide for more consistent and effective protection.[11] In its conclusion, the Commission states its intention to submit a proposal and directive addressing the following issues:

1. whether copyright protection should apply to computer programs fixed in any form;
2. whether programs should be protected where they are original in the sense that they are the result of their creator's own intellectual efforts and are not commonplace in the software industry;
3. whether access protocols, interfaces, and methods essential for their development should be excluded from protection;
4. how broadly the use right should be formulated;
5. whether the adaptation of a program by a legitimate user exclusively for the users own purposes and within the basic scope of a license should be permitted;
6. whether reproduction, without authorization, of programs should be permitted for private purposes;
7. what the term of protection should be;
8. how authorship should be defined, including authorship of computer-generated programs;
9. whether protection should be available for creators who are nationals of States adhering to the Berne Convention or the Universal Copyright Convention or enterprises of such countries, or whether protection should be extended to all persons regardless of origin or domicile; and
10. upon which party the burden of proof should lie in infringement cases.[12]

Chapter 6: Databases

The Green Paper defines databases as ''collections of information stored and accessed by electronic means.[13] The paper points out that under certain conditions, 'compilations' are, at least in part, protected under the copyright laws, but electronic databases raise a number of technical and legal problems.[14]

The paper discusses two alternative solutions. First, it suggests legal action to protect the compilation of works within a database where those works are themselves the object of copyright protection.[15] The second alternative would be protection of databases composed of material which is not itself protected by copyright. The Commission suggests that the second option would only be exercised if it were felt that the considerable investment which a compilation of a database presents could best be served by copyright protection rather than by other means.[16]

Thus, the Commission considered the following issues:

1. whether the mode of compilation within a database of work should be protected by copyright; and
2. whether the right to protect the mode of compilation, in addition to possible contractual arrangements to that effect, should be extended to databases containing material not itself protected by copyright and whether this protection should be copyright or a right in general.[17]

Chapter 7: External Relations

One goal of the Commission is to improve the existing protection of intellectual property rights recognized by existing national legislation through the application of some of the general principles of the GATT (General Agreement on Tariffs and Trade) .18

10 Ibid., pp. 171-175.
11 Ibid., pp. 175-180.
12 Ibid., pp. 200-201
13 Ibid., p. 205.
14 Ibid., pp. 207-211.
15 Ibid., p. 211.
16 Ibid., p. 211.
17 Ibid., p. 216.
18 Ibid., p. 218.

Continued on next page

Box 3-E—The Green Paper on Copyright and the Challenge of Technology: Copyright Issues Requiring Immediate Action-Continued

The Commission suggests that all GATT member countries adhere to international conventions on intellectual property, e.g., the Paris Convention for the Protection of Industrial Property and the Berne Convention for the Protection of Literary and Artistic Works.[19] Further, the Commission has proposed, ***inter alia,*** that computer programmers should have exclusive rights to the use of their programs.[20] It has also proposed that semiconductor manufacturers should be given exclusive rights to the topography of the semiconductor.

The Commission also states that the application of "national treatment" and "most favoured nations treatment" would ensure that discrimination between national and foreign right holders and among foreign right holders themselves is avoided, both with regard to the substantive standards applied and the enforcement procedures and remedies.[21]

The Commission invited comments on:

1. the priorities to be given to the different aspects of reinforcement of intellectual property protection in the international context;
2. the development by (MIT of new disciplines as regards the effective enforcement of intellectual property laws, in particular, copyright and/or adoption of improved substantive standards; and
3. the more systematic use of bilateral relations, to ensure better protection in nonmember states of the intellectual and industrial property of Community right holders, particularly in the copyright field.[22]

19 Ibid., pp. 221-224.

20 Ibid., p. 223

21 Ibid.

22 Ibid., p. 236.

SOURCE: OTA, 1992.

Article 2—Authorship of Programs

Article 2 establishes the criteria for authorship under the Directive.[137] This article specifies the criteria to determine authorship in works created by individuals or groups and in collective works.[138] With respect to works-made-for-hire, the directive states that where a computer program is created in the course of employment, the employer is entitled to exercise all economic rights in the program, unless otherwise provided by contract.[139]

Article 3—Beneficiaries of Protection

Article 3 provides protection to all natural or legal persons eligible under national copyright legislation as applied to literary works.[140]

Article 4-Restricted Acts

Subject to the provisions of article 5 and 6, the author has the exclusive right to do or to authorize the permanent or temporary reproduction of a computer program by any means, in any form, in part or whole.[141] Insofar as loading, displaying, running, transmission or storage of the computer program requires a permanent or temporary reproduction of the program, such activities are subject to authorization by the right holder.[142] The author also has exclusive rights to translation, adaptation, arrangement, and any other alteration of a computer program and the reproduction of the results of these without prejudice to the rights of the person who alters the program.[143] The distribution of a computer

137 Ibid., art. 2. However, article 2 does not impose criteria with respect to authorship of works created by legal persons or as collective works. These questions remain regulated by the member states.

138 Ibid., art. 2, sec. 1. However, article 2 does not impose criteria with respect to authorship of works created by legal persons Or as collective works. These questions remain regulated by the member states.

139 Ibid., sec. 3.

140 Ibid., art. 3.

141 Ibid., art. 4.

142 Ibid.

143 Ibid.

program to the public, whether a copy or the original, is to be subject to right holder authorization.[144] This distribution right is exhausted, under the provisions of article 4, following the first sale of the program in the EC by the right holder or with his or her consent, with the exception of the subsequent rental of the software. 145

Article 5—Exceptions to the Restricted Acts

Article 5 provides that, in the absence of specific contractual provisions, the restricted acts of article 4 (a) and (b) will not require the authorization by the right holder where they are necessary for the use of the program by the person who lawfully acquired it in accordance with its intended purpose, including correction of errors.[146] Article 5 also provides that the right to make a backup copy by a person having a right to use a program cannot be contracted away.[147] Further, the person having a right to use a copy of a program shall be entitled, without authorization of the right holder, to observe, study, or test the functioning of the program in order to determine the ideas and principles which underlie the program, even if this is accomplished while loading, displaying, running, transmitting, or storing the program as provided for in article 5[148] or by the terms of his license. Read in conduction with the preamble, article 5 provides that if there is no license agreement, or if the license agreement is silent on the point, error correction is permitted. The license may also deal with error correction to regulate it, i.e., make an offer to provide correction service but not prohibit it entirely.

Article 6--Decompilation

Article 6 deals with the issue of recompilation.[149] Article 6 allows for reproduction of the code and translation of its form without the authorization of the owner (notwithstanding contractual provision to the contrary) when these activities are indispensable to achieve the interoperability of an independently created computer program, provided that certain conditions are met.[150] These conditions are that: 1) these acts are performed by the licensee or by another person who has the right to use a copy of a program, or on their behalf by a person authorized to decompile the program; 2) the information necessary to achieve interoperability has not been made readily available to these persons; 151 and 3) these activities are confined to the parts of the original

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144 Ibid.

145 Ibid.

146 Ibid., sec.1. Some commentators believe that this provision reflects that European law may be more consumer-oriented in character than U. S. law, which might require an option of either provision of error-correction or an implied license to modify the copyrighted code. They state that in the United States there is a court-created doctrine of 'implied license" in patent law not necessarily wholly displaced by ''fair use' in copyright law. Domestic courts tend to decide controversies over mass-distributed software resident on floppy disks under the Uniform Commercial Code (UCC) article 2, which have some lesser consumer protection provisions. Efforts arc now underway under the direction of the National Conference of Commissioners on Uniform State Laws to consider a uniform software licensing act and in committees within the Massachusetts Bar Association and the Licensing Executives Society to develop a UCC article 2B addressed to licensing of intellectual property rights generally. These are not expected to add significantly to consumer protection. Stephen Y. Chow, Cesari and McKenna, personal communication, Sept. 27, 1991.

147 Ibid., sec. 2.

148 Ibid., see. 3.

149 Ibid., art. 6. The term ''dccompilation'' is a matter of some debate within the EC. Some observers view decompilation as one aspect of the larger process of reverse engineering, and assert that the directive broadly allows 'recompilation. ' Representatives of Bull S. A., and the European Committee for Interoperable Systems, personal communication, June-July 1991.

Others believe that the word 'recompilation'' is inappropriately used, that since the term 'recompilation'' is not defined in the Directive no meaning can be attributed to it other than that it covers only those acts covered specifically in article 6 of the directive, irrespective of whether the word is used with other broader meaning in other contexts. These observers argue that the term ''recompilation' might well be eliminated, as member states are required only to transpose the substance of the directive to create the same legal effect in national legislation as that intended in the directive in order to fulfill the implementation requirement. Indeed, member nations are not required to adopt any particular terminology and, in particular, not obliged to take any particular topic heading. Representatives of IBM Europe, personal communication, June-July 1991. For further discussion of the question of decompilation, see ch. 4.

150 Ibid., sec. 1.

151 The language ''made readily available'' is interpreted differently by different stakeholders. Some parties would assert that the language was initially included to preclude publication of the code in an obscure language and location and to then maintain that the code was therefore ''available' or "public," However, debate continues whether code that is made available for a negotiated price is considered "readily available. " Further, observers question whether code is ' 'readily available' when parties wishing to decompile must first consult with software developers to obtain code, disclosing the purpose and nature of their request. Still others assert that it was made clear by the Commission to the Council in December 1990 that the right holder and the would-be decompiler could enter in to a dialog on the possible supply of information with or without payment. Representatives of IBM Europe, Bull S. A., the European Committee for Interoperable Systems, personal communications, June-July 1991.

program which are necessary to achieve interoperability.[152]

Information gained through reproduction of the code under article 6 may not be used for goals other than to achieve interoperability of the independently created program.[153] It may not be given to others, except when necessary for interoperability of the independently created program.[154] It may not be used for the creation or marketing of a program which infringes the copyright of the original progarm.[155]

Article 6 also recognizes that the article, in accordance with the provisions of the Berne Convention, may not be interpreted so as to allow its application to be used in a manner which unreasonably prejudices the right holder's legitimate interests and conflicts with a normal exploitation of the computer program.[156]

Article 7--Special Measures of Protection

Under article 7, member states are required to provide, without prejudice to articles 4, 5, and 6, appropriate remedies against persons committing any of the following acts:

1. placing in circulation a copy of a computer program, knowing, or having reason to believe, that it is an infringing copy;
2. possessing a copy of a computer program for commercial purposes, knowing, or having reason to believe, that it is an infringing copy;
3. putting into circulation or possessing for commercial purposes any means, the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which may have been applied to protect a computer program.[157]

An infringing copy of a computer program is liable to be seized pursuant to the individual member state's legislation.[158] Member states may provide for seizure of any means described above,[159]

Article &Term of Protection

Article 8 establishes the term of protection as the life of the author plus 50 years after the author's death. Where the computer is an anonymous or pseudonymous work, the term of protection shall be 50 years from the time that the computer program is first lawfully made available to the public. The term of protection is deemed to begin on the first of January of the year following these events.[160] Member states, which presently have a term of protection longer than this may maintain that term

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152 Ibid, sec. 1, subsec. (a).(c). This provision of the directive was the focus of particular controversy. The previous draft to the directive, ''Amended proposal for a Council directive on the legal protection of computer programs" COM(90) 509 final—SYN 183; (90/C 320/1 1), (art. S(a), sec. 2), read:

> [T]hese acts are confined to the parts of the original program which are necessary to achieve interoperability *within it*. (Emphasis added.)

Thus, the final version of the Council Directive deletes the final two words of the provision ''with it. "

The Commission further commented on this aspect of the directive in the Commissioner's Communication to the European Parliament, 2,1, Sec. 4.g.2). In that document, the Commission stated:

> A particularly important question was to determine the extent to which the decompiling of a program without the copyright holder's authorization would be possible. The solution adopted in the common position was that decompiling was permitted in so far as it proved necessary for the interoperability of a computer program created independently. Decompiliation is permitted to the extent necessary to ensure the interoperability of an independently created computer program. Such a program may connect to the program subject to recompilation. Alternatively it may compete with the decompiled program and in such cases will not normally connect to it. Article 6 does not however permit interoperability of the independently created program. It cannot therefore be used to create a program reproducing parts of a decompiled program having no relevance to the interoperability of the independently created program.

While there is some agreement that a programmer can isolate the critical sections of code needed to accomplish interoperability by viewing externals, running the program on a display screen and looking at the code, the amount of program necessary is subject to debate. Courts will likely be required to judge the appropriateness of the use of sections and amounts of the code.

153 Ibid., subsec. (a).

154 Ibid., subsec. (b).

155 Ibid., subsec. (c).

156 Ibid., sec. 3.

157 Ibid., art. 7, sec. 1 (a)-(c).

158 Ibid., sec. 2.

159 Ibid., sec. 3.

160 Ibid.. art. 7.

until the term of protection for copyrighted works generally is harmonized by EC law.[161]

Article 9—Continued Application of Other Legal Provisions

Article 9 ensures that the provisions of the software directive do not prejudice any other legal provisions,[162] and provides that the provisions of the directive are applicable to programs created prior to January 1, 1993 without prejudice to any acts concluded and rights acquired before that date.[163] Contractual provisions contrary to article 6 or to the exceptions provided for in article 5(2) and (3) are nullified by this provision. [164]

Article 10—Final Provisions

Under article 10, member states are required to bring into force the laws, regulations, or administrative provisions needed to transpose the directive by January 1, 1993.[165] Member states are to inform the Commission of the provision of national law which they adopt pursuant to the directive. [166]

Article 11

Article 11 addresses the directive to the member states. [167]

161 Ibid., art. 8, sec. 2.

162 Ibid., ch. II, art. 8, sec. 1.

163 Ibid., sec. 2.

164 Ibid,, sec. 1. For discussion of U.S. law dealing with use of contractual agreements to protect intellectual property, see ch. 2.

165 Ibid., art. 9, sec. 1.

166 Ibid., art. 9, sec. 2.

167 Ibid., art. lo.