Santa Clara University School of Law

Santa Clara High Technology Law Journal

Volume 7 | Issue 1 Article 2

January 1991

Shaping Legal Advice to Meet the Development Demands of the Specific Inventive Environment

Howard C. Anawalt

Elizabeth Enayati

Editor's Foreword: Modern society's reliance upon computers, semiconductors, and other forms of high technology has led to a greater awareness of the legal problems that can arise in the industries which design and develop these technologies. This article addresses a number of preliminary considerations with which attorneys representing high technology industries and their employees must concern themselves. This article is extracted from the upcoming publication, 1991 LICENSING LAW HANDBOOK by Howard C. Anawalt and Elizabeth Enayati. Used with permission of Clark Boardman Co., Ltd. THE HANDBOOK, to be published later this year, may be ordered from the publisher, Clark Boardman, 375 Hudson Street, New York, New York 10014. Tel: 1-800-221-645-0215, (in New York State, 0-212-645-0215 [collect]; Fax: 212-924-0460. Throughout the article, references are made to other pages and chapters of the book.

The article's focus concerns a very practical, but often overlooked matter—adapting one's counseling skills to most effectively serve the high technology or inventive client's needs. The article offers insights into the nature of specific inventive environments and touches upon a number of substantive legal issues that frequently arise in particular contexts. The underlying premise of the article is that only after gaining a thorough understanding of how the client "operates" will counsel be most fully enabled to meet the needs of the client.

SHAPING LEGAL ADVICE TO MEET THE DEVELOPMENT DEMANDS OF THE SPECIFIC INVENTIVE ENVIRONMENT

Howard C. Anawalt†
Elizabeth Enayati‡

TABLE OF CONTENTS

† Professor of Law, Santa Clara University School of Law. A.B., 1960, Stanford University; J.D., 1964, University of California, Berkeley.

‡ Associate, Lahive & Cockfield, Boston, Massachusetts. B.S., 1980, J.D., M.B.A., 1989, Santa Clara University.

SHAPING LEGAL ADVICE TO MEET THE DEVELOPMENT DEMANDS OF THE SPECIFIC INVENTIVE ENVIRONMENT

1.1 Overview

Licensable technologies develop in industries with widely differing environments. These differences influence strategies and legal choices. This chapter deals with those aspects of inventive environments that the attorney needs to take into account when shaping advice.

We believe these factors need to be taken into account:

1. Type of Company (Sections 1.3 and 1.4.).
2. Kind of workforce (Sections 1.5, 1.6, and 1.7).
3. Nature of inventive work (Section 1.10 through 1.13).
4. Relationship between the invention and the company's market (Section 1.8).
5. The value of the invention in itself (Section 1.8).
6. The development process (Section 1.10 through 1.14).
7. Contracts affecting invention rights (Sections 1.18 and 1.19).
8. Other parties' legal claims (Sections 1.2, 1.16, 1.17, and 1.18).
9. Available legal tools (Discussed throughout).
10. Practical issues, such as timing and licensing (Sections 1.8, 1.18, and 1.19).

We emphasize the use of patents, copyrights, trade secrets, and confidentiality arrangements in the context of the different types of businesses. We examine the practical effect and use of the doctrine of corporate opportunities, the use of protective orders, and the way that contractual arrangements and industry customs create forms of intellectual property.

GUIDELINE ONE

COUNSEL MUST CONSIDER THE ENTIRE INVENTIVE ENVIRONMENT WHEN ARTICULATING EFFECTIVE, AS OPPOSED TO PRO FORMA LEGAL ADVICE.

The hard work and flashes of insight that occur in the invention process have influenced legal doctrine. We examine three of those influences: the moment of conception, the use of inventor's notebooks, and the effect of hard work on the outcome of a case. We review reverse engineering and clean room procedures. We discuss concerns related to potential infringement claims—measures of

damages, bad faith, and the role of juries. We emphasize that trade secret considerations and employee invention obligations must be translated into practical working arrangements.

Licensing considerations enter into the invention process itself. For example, counsel may be asked to advise in a situation where the client needs to choose between seeking a license or designing around a competitor's technology.

Our focus is on the invention process itself, rather than the marketing of inventions. We do, however, wish to remind counsel of the importance of alerting clients to the use of trademarks, service marks, trade dress and unfair competition doctrines to protect marketing interests. Names such as "IBM," "Xerox" and "Coca Cola" have acquired great value in the marketplace, and we remind the practitioner to be alert for opportunities to protect in these areas.

We emphasize throughout this chapter that it is important for the counselor to understand and assess the specific capabilities and needs of the inventor in the working context.

Finally, licensing considerations abound in the invention process itself. Companies must make choices whether to license or to invent themselves. Licensing considerations may affect the choice of technology protection. For example, a company may decide to preserve a process as a trade secret and license it selectively rather than pursue a patent.

1.2 Development and Other Inventors' Claims

The flip side of developing one's own intellectual property is the potential for intruding on the rights of others. The counselor must be aware of, and act on this reciprocity throughout the process of guiding the developer. Specific problems of anticipation and dealing with other inventors' claims are the focus of Chapter Five,[1] however, we emphasize that these two areas cannot be viewed in isolation. Also, due to the reciprocal relationship between creating and defending, we will discuss certain defensive concerns in context in this chapter.

1. *See* H. ANAWALT & E. ENAYATI, 1991 LICENSING HANDBOOK (to be published later in 1991).

GUIDELINE TWO

HOSTILE INTELLECTUAL PROPERTY CLAIMS MUST BE CONSIDERED AND GUARDED AGAINST DURING THE DEVELOPMENT PROCESS BY LICENSING, ALTERNATIVE DESIGN, LEGAL OPINIONS AND OTHER ACTIONS.

1.3 Type of Company

The specific characteristics of the company or group have a direct impact on the intellectual property attorney's work. In general, the size of the company and its line of production or service are important.

Small Companies

An attorney should give a small company full professional attention, but as a practical matter, such a company may often not be able to afford the same range of legal services as a larger company. Generally, this difference between large and small companies occurs more with regard to patent protection, than copyright, trade secret or licensing. A small company should not have to choose between the most expensive legal protection or none at all. An advisor to a small company can provide full and adequate intellectual property advice and service by offering the client realistic choices.

For example, researching and prosecuting even a single patent may be a large expense for a small company. To gain appropriate protection, the company's officers need to prioritize and choose which applications to pursue first. A timetable and budget helps management to plan and increase necessary protections as the company grows. At the outset, employee education on preserving confidences and guarding special projects can provide protection that is effective relative to what can be budgeted.

Development costs are high for many kinds of technology. Smaller companies simply may not be in a position to follow through on some of their design insights. Some patent opportunities, for example, may be lost to small companies.

The counselor to the small company should suggest ways in which the small company can develop its invention resources. If patentable processes or devices are anticipated, the smaller company can consider negotiating a development or cross licensing agreement in order to finance the development and protection of the intellectual property.

Small companies also face larger obstacles when it comes to

avoiding entanglement with patent claims of other companies. They may not have the resources to commit to researching the patent claims of others in their field. The attorney must work with those companies to develop an effective approach that complies with the demands of the law.

Fortunately, the nature of copyright and trade secret law allows even the small company adequate means to foresee and deal with the claims of others. Copyright law forbids copying and adapting[2] the expressions of others. The small company does not offend copyright when it independently develops its own work or creates a different expression of a basic idea contained in another's work. An attorney can provide effective advice to software companies, which are often small, by simply urging them: Avoid copying. To a large degree, software developers understand and know what is really just plain copying. The software developer needs to consult with counsel when in doubt. There are also critical areas that need special explanation at the outset. For example, the attorney needs to explain the limitations of adapting file structures from one program to another.[3]

The small company can generally adopt inexpensive approaches to avoid difficulties with other companies' trade secret claims. It can provide adequate explanations to its inventors to allow them to identify and avoid others' secrets.[4] Another precaution is to adequately document its own course of development.[5]

Copyright and trade secret protection are generally not expensive for the small company to create. As noted, copyright is created virtually automatically—when an expression is fixed in a medium, copyright is created.[6] Registry with the Copyright Office for a very small fee secures the full panoply of remedies. Basic care and diligence in guarding information and processes which are valuable creates trade secret protection. Trade secret protection depends on thoroughness and knowledge, not legal expense per se. Finally, the small company may complete its protection by having its attorney draft licenses and confidentiality agreements as the need arises.

---

2. The 1976 Copyright Act grants the copyright owner the exclusive rights to make copies and derivative works. *See* 17 U.S.C. § 106 (1988).

3. *See* Whelan Assoc. v. Jaslow Dental Lab., 797 F.2d 1222 (1986), discussed *infra* at sec. 1.5.

4. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.9, 2.10.

5. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.9, 2.10.

6. 17 USC § 102(a) (1988).

GUIDELINE THREE

SMALLER COMPANIES OFTEN REQUIRE EFFICIENCY AND SIMPLICITY IN THEIR INTELLECTUAL PROPERTY PROTECTION.

Larger Companies

In general, large companies have more routinized operations. In a small company, counsel may deal directly with the president and get to know most of the inventors rather well. In a larger company there are likely to be layers of organization of which the attorney must be aware.

Our concern is to fit legal advice into an effective program of developing intellectual property. Counsel needs to know "the lay of the land." Counsel should become acquainted with the individuals who occupy critical positions with regard to development. Companies take very different attitudes toward intellectual property and its development. At one end of the spectrum are companies that pay little direct attention to its development. These companies respond to intellectual property needs only when pressed, for example, by finding themselves in a lawsuit. At the other end of the spectrum are companies that have highly organized internal intellectual property operations which are strongly supported by legal staff and educational efforts.

Some larger companies have a full in-house counsel operation which focus on intellectual property issues. Others rely entirely on outside counsel. Some companies are open to suggestions on adopting an intellectual property program, while others need to be convinced of the value of such efforts.

It is probably important for counsel to be aware of the prevailing "corporate culture" or internal environment of a client company. The relations among workers and management vary from very formal to very informal. The internal environment affects information gathering and communications. Counsel may need to assess the environment in order to determine the most effective method of communication. We mention these aspects because developing legally protected inventions demands the same patience that fishing does. Inventors must be persuaded to come forward with inventions, and their companies need to be receptive to advice. A company will not benefit from the legal protections until it is prepared to work with its lawyers in a development program.

1.4 The Special Case of the Start-up

The start-up company is a special case for the intellectual property lawyer. Such fledgling companies are usually characterized by one or more of the following common factors:

- Anticipated *rapid* expansion or exploitation of a new niche.
- Reliance on *innovation* for growth.
- Outside investors or "*venture capitalists*" who are betting on the success and timing of development.
- Involvement of *key personnel* who have come from other jobs.

GUIDELINE FOUR

START-UPS, OR COMPANIES WITH FAST GROWTH, HIGH RELIANCE ON INNOVATION, NEW OUTSIDE INVESTMENT, AND PERSONNEL FROM OTHER COMPANIES, PRESENT SPECIAL PROBLEMS.

A typical Silicon Valley start-up involves all four of the above-mentioned factors. For example, in May 1990, *Electronic World News* reported that a new Silicon Valley start-up intends to exploit a new concept in semiconductor chip architecture.[7] The company, S3 Inc., will manufacture chip sets that can be used flexibly with different microprocessors, bus architectures, and system speeds. This start-up is headed by a president and vice president who came from another chip manufacturing company in Silicon Valley.[8]

Business and legal considerations are encompassed in these four factors, and it is best if the intellectual property advisor acquaints herself with both. Let us focus on some of the legal factors. First, the need to move rapidly into a field tends to focus the company's resources on immediate design, production, and marketing efforts rather than legal needs. Some companies will attend to basic needs such as incorporating, but such items as intellectual property protection may not appear to be as important to the founders as they will become later on. Where this is the case, the legal advisor should alert the management to the need to start some planning in the intellectual property area. Conversely, other companies may place a very high emphasis on protection at the outset, because the founders recognize that it is essential to their development.

The second factor, reliance on innovation, is closely related to

7. Cole, *A Move to Change PC Chip Set Rules*, Electronic World News, May 7, 1990, at 1.

8. *Id.*

the strategy of moving rapidly into a market. The power of inventions in the market place depends on timing, consumer need, and consumer awareness. The innovative company places its effort on designing and producing its products and getting them to market. Engineering time, for example, is spent on meeting deadlines, rather than on communicating potential inventions to the lawyers. Even though very little effort needs to be expended on copyright, trade secret, or licensing matters, those basic protections may be forgone. Where pressures of this kind exist, the attorney should provide realistic assurance that obtaining some measure of legal protection, including patents, need not be burdensome in terms of time or money.[9] Sometimes the business answer will be to simply rush a project along because the need to get to market predominates. When such a choice is made consciously, that is fine. However, the legal advisor needs to be sure that the decision maker is aware of the intellectual property considerations, including trademark aspects, and the need to steer clear of other companies' intellectual property claims.

The third factor is the presence of outside investors. These people entrust their money to the judgment of the managers and the prospects of the business. One legal concern is the need for fair disclosure to those who invest. The attorney should counsel the organizers and promoters of any start-up concerning the need for honest and accurate representation of the facts, including the status of intellectual property development, such as patents, and the potential for claims by others.[10]

The need for disclosure also arises when the company "goes public," that is, moves from financing by private investors to stock offerings to the public. That process is regulated tightly by federal law,[11] and requires exhaustive disclosure of business information which includes intellectual property—patents, copyrights, trademarks, and other information that is material to an investment decision.[12] When the decision is made to move from private to public

9. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.11.

10. The matter is a very basic part of legal counseling. Sometimes it is a very difficult part of the job. The attorney needs to be firm, but need not make his client feel defensive or bad. Many times people simply do not realize what or how much needs to be disclosed. Also, people tend to get swept up in the hurry and excitment of the new venture. The client will better understand the need for candor if the attorney can get him to put himself in the investor's shoes for a minute.

11. *See* Securities Act of 1933, 15 U.S.C. §§ 77a-aa (1988), and Securities Act of 1934, 15 U.S.C. §§ 78a-kk (1988). An excellent reference is H.S. Bloomenthal, Going Public Handbook, published in a new edition annually.

12. H.S. Bloomenthal's description of the requirement includes: "A description of the

status, intellectual property holdings and projects should be reviewed by counsel to understand their impact on the decision and to prepare for appropriate provision of information through counsel retained for the public offering process.

The issues of litigation are very significant in the "going public" process. A registrant must disclose the identifying facts and alleged factual basis for "any material pending legal proceeding other than routine litigation incidental to its business."[13] The law requires a registrant to review intellectual property claims thoroughly, including potential claims, and make an appropriate decision on disclosure.

A special type of investors called "venture captalists" may express certain specific demands regarding intellectual property. These investors are likely to view inventions as a specific type of capital in which they are investing. At each round of financing the investors or their groups may well inquire into the progress of inventive work and the status of intellectual property. The venture capital firms are likely to apply more pressure on this aspect than other investors. Also, venture capital firms usually represent a number of different investors and invest in many different high tech companies. Thus, the attorney should advise the principal organizers of his client start-up company to make appropriate inquiries regarding other relationships and secure confidentiality agreements as appropriate.

The final factor is the involvement of key personnel who have come to the start-up company from other companies. This occurrence is very common, especially in high tech companies, and poses the risk of a dispute with the former employer, who may claim that the former employee has taken trade secrets or business opportunities. The threat posed by such claims can be very severe and legal proceedings can escalate rapidly. In a trade secret case, for example, the former employer may seek a temporary restraining order, followed by a preliminary injunction to protect its alleged trade secrets.

The start-up company can take measures to protect itself. A basic guideline is that the employee who moves from one company

---

status (planning stage, prototype stage, etc.) of any publicly announced new product or industry segment that is material [to] . . . the importance of trademarks, patents, franchises and concessions to segments of the registrant's business . . . ." H.S. BLOOMENTHAL, 1990 GOING PUBLIC HANDBOOK at 4-14 (1990).

13. *Id.* at 4-15 (1990). The authors add: "It would . . . probably be misleading to state, for example, that there is no pending litigation when the registrant is aware of substantial threatened litigation and even, under certain circumstances, if aware of unasserted claims."

to another is free to take skills and knowledge, but not the employer's trade secrets or inventive works which contractual arrangements require to be left behind.[14]

Any colorable lawsuit can hurt a start-up company, even one it can eventually win. Potential investors may hold back due to the cloud of the suit, valuable new employees may be unwilling to join the company because of uncertainty, and customers and suppliers may be discouraged from doing business. The former employer may have the resources to commit to a legal battle, while the start-up may not. Preliminary relief in injunctive proceedings can have the practical effect of putting a start-up company out of business, even though the company might well be able to prevail at trial.

The legal advisors to the established company undoubtedly recognize the non-courtroom disadvantages that the start-up company faces. In some instances, the established company will initiate legal proceedings with a primary intention of taking advantage of the relative weakness of the start-up company. The start-up management needs to be forewarned of this possiblity.

The start-up company can take practical steps to minimize the impact and likelihood of a preemptive legal attack by a former employer. During the exit process from the former employer, the start-up founders should be very careful about what they sign. For example, employees are sometimes asked to sign forms that "acknowledge" the existence of obligations that did not previously exist. Such forms or memos should be reviewed by counsel. This is a delicate matter. The departing employee needs to avoid all commitments or admissions that are not appropriate and accurate.[15] At the same time, the employee needs to avoid raising suspicions, mistrust, or bad feelings.

A good approach is to counsel a departing employee thoroughly before the exit interview. He should be encouraged to handle all matters himself if he can. If the employee feels that the matter is going badly or needs help, then he should excuse himself, ask for some further time, or call his attorney. If the employee is asked to sign a form that is inappropriate, he can volunteer promptly to supply another form of acknowledgement of obligations. The substitute form of acknowledgement should be carefully drafted to include only those obligations that actually apply. These

14. *See* H. ANAWALT & E. ENAYATI, secs. 2.2-2.10.

15. One might argue that a commitment that goes beyond existing obligations is not enforceable. That may (or may not) be true. But the point is that exit forms can be extremely impressive at the time that *preliminary* relief is sought, and as has been noted, critical damage may be done to the start-up by preliminary relief alone.

steps can be taken tactfully. Remember, the employee who leaves is not a stranger; he is someone who has had a place in the former company. If the relations with the employer have been cordial, collegial, or friendly, that tone should be preserved in the departure. If the relations have been strained, then a special effort should be made to improve the atmosphere at the time of separation.

As additional employees are added to the start-up company, similar protective measures should be taken. All new employees should be counseled to leave what belongs to the former employer behind. The attorney should also consider formalizing that obligation in an employment contract offered by the start-up company to the new employees.[16]

Sometimes the start-up company has an opportunity to do business with or cooperate with the former employer. These possibilities should not be overlooked in the planning. They can be a source of amicable exchange.

GUIDELINE FIVE

KEY PERSONNEL NEED TO BE ADVISED TO DEPART FORMER EMPLOYMENT AS AMICABLY AS POSSIBLE, BEING CAREFUL TO LEAVE TRADE SECRET WORK BEHIND.

The critical period for the start-up company is the very beginning. The first two or three months are the most sensitive. Every week that goes by after that is a good sign that trouble with the former employer is less likely. When any indication of trouble with the former employer surfaces, it should be reported to counsel immediately. Counsel should explain this fully to the management. A good rule of thumb for the attorney is to see what steps can be taken to avoid escalation into a legal battle.

1.5 The Workforce and its Tasks

The nature of the workforce and its particular inventive tasks are interrelated factors that strongly influence protection of intellectual property. The following software copyright case illustrates the value of understanding how the inventors approach their task. *Whelan Associates v. Jaslow Dental Lab.*[17] involved a dispute over ownership of a computer program that helped accomplish administrative work in a dental laboratory:

> Jaslow Lab, like any other small or medium-sized business

16. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.2-2.10.
17. 797 F.2d 1222 (3d Cir. 1986).

> of moderate complexity, has significant bookkeeping and administrative tasks. Each order for equipment must be registered and processed; inventory must be maintained; customer lists must be continually updated; invoicing, billing, and accounts receivable, must be dealt with. While many of these functions are common to all businesses, the nature of the dental prosthetics business apparently requires some variations on the basic theme.[18]

In order to advance the original claim that copyright protected the file structures, it was necessary to understand how the computer programs were written. The copyright claim ultimately prevailed in the court of appeals because the attorneys convinced the court that the program file structures were discrete and unique enough to be viewed as expressions. If the opposing party had been able to show that the type of program could only be written with the same file structures, the copyright claim would probably have been lost.

Software designers use basic tools of their trade and follow certain conventions in their work.[19] When the attorney becomes familiar with these, she will be able to pick out legal issues and fill in the gaps related to legal protection. How the attorney gathers essential information depends on the education and background of the inventors. Their background and their communication habits color the information itself. In order to give effective legal advice, the attorney must deliver it in a way that will be understood. Again, software designers may tend to understand things from their perspective rather than the attorney's accustomed viewpoint.

The particular goals or tasks of the inventor determine what information the attorney must have to give effective advice. For example, in a situation like the *Whelan* case, the attorney must understand what the software is expected to do. If the attorney knows that the software is to control the administrative tasks of the laboratory, then he can isolate particular aspects of the program amenable to protection; in that instance, the file structures themselves.[20]

It is also useful to note that industries, especially in the high technology field, often employ workers from different cultures. When this is the case, occasions may arise when people misunderstand one another. The attorney needs to be alert to these possibilities and effective in remedying them.

---

18. *Id.* at 1225.

19. *See infra* sec. 1.11.

20. *Compare Whelan with* Plains Cotton Co-op v. Goodpasture Computer Serv., 807 F.2d 1256, 1262 (5th Cir. 1987); Digital Communications Assocs. v. Softklone Distrib. Corp., 659 F. Supp. 449 (N.D. Ga. 1987); Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37 (D. Mass. 1990).

GUIDELINE SIX

BECOME ACQUAINTED WITH THE WORK FORCE AND WITH THE NATURE OF ITS INVENTIVE WORK.

The attorney should not jump to conclusions, however. Observations such as "engineers always think this way" create misunderstandings and may prevent the attorney from inquiring and learning essential facts.

With these observations in mind, we will take a look at the structure of some sample high technology industries in the next two sections, sections 1.6 and 1.7. Then in sections 1.10 through 1.13 we will examine the specific technologies of those industries.

1.6 Semiconductors, Software, and Assembled Computer Products

We speak of the computer industry. It is indeed an industry, but it is one made up of many levels. The basic building blocks of the industry are:

1) Semiconductor products—chips. The foundation of all modern computers and related control systems is the silicon chip. These are tiny devices, integrated circuits, which contain thousands of circuits and electronic devices essentially etched into layers of silicon.

2) Software. The chips that make up computers and control mechanisms need to receive instructions in a machine operable form in order to work at all.[21] "Software" includes all the different instructions necessary to get a computerized process to function.[22]

---

21. The predominant form of such instructions today is in the form of programming which directs the path of electronic pulses.

22. Here are some definitions from other sources: "In its most general form, software is a term used in contrast to *hardware* to refer to all *programs* which can be used on a particular computer system." A. CHANDOR, THE PENQUIN DICTIONARY OF COMPUTERS 415 (3d ed. 1985). The more inclusive term is "program," which the same work defines as "a set of *instructions* composed for solving a given problem by computer." *Id.* at 362. The Illustrated Dictionary of Microcomputers defines software as "the programs, routines, languages, and procedures used in a computer system. Software items include assemblers, generators, subroutines, compilers, and operating systems." M. HORDESKI, THE ILLUSTRATED DICTIONARY OF MICROCOMPUTERS, 286 (2d ed. 1986). *In Apple Computer, Inc. v. Franklin Computer Corp.*, the court summarized that the processing component of a computer "in lay terms . . . does the work it is instructed to do. Those instructions are contained on computer programs." Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1243 (3d Cir. 1983). In most current computers critical software, such as the operating system, is built into storage devices such as read only memories (ROMs) or electrically programable read only memories (EPROMs) and maybe called "firmware." That was the form of software at issue in the Apple case. John S. Wenstrand, an engineer at the Center for Integrated Systems, has made the following helpful observations: In the earliest digital computers, such as ENIAC,

3) Assembled computer products. These include personal computers ("PCs"), workstations, mainframes and other computers. The chips must be integrated into some such product for us to take advantage of them. Software needs to be written, and the chips and programming combined into a finished product. In addition to computers, many other products, such as computer peripherals (disk drives, printers, etc.) and controls, combine integrated circuits and instructions.

Focusing first on the semiconductor industry: Its products are mainly the work of electrical engineers. The primary method for protecting intellectual property in the semiconductor field is patents. Patent protection for the technology falls principally into two categories—protection of designs or devices incorporated into the chip structure[23] and protection of processes for manufacturing the chips. These matters are discussed in more detail in section 1.12, which deals with understanding semiconductor technology.

Each chip is a very compact bundle of inventions, many of which are patented. New devices in the semiconductor industry sometimes represent large strides such as the integrated circuit, the floating gate, or the microprocessor. Other inventions create relatively small efficiencies. The complexity of the chip places huge pressure on any company in the field: Can we practice a certain method of accomplishing a task, or must we get a license to do so?

The pressure bears particularly heavy on smaller companies and new entrants. Because so many of the elements of chip architecture are patented, a new entrant may either have to invent many new ways of performing even relatively small operations or obtain licenses. If a new entrant in the semiconductor business sees a niche that it can fill, it is likely that it will have to obtain licenses from other companies. Making an unfortunate judgment call on this matter can subject a company to an expensive lawsuit. As we have seen, a lawsuit poses a grave threat to a new entrant even when it has a good defense.[24]

The semiconductor industry is also characterized by new companies that "spin off" from older companies. A federal district court judge made an observation almost twenty years ago that is no

---

instructions to the machine "were defined in terms of a set of connections made by physically installing wires." However, "what distinguishes software, whether it is stored on a computer disk, chisled in stone, or included with a computer in a ROM, is its quality of being pure information (no material form) and its representations of a program." Letter from John S. Wenstrand (date, year).

23. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 4.4.

24. *See supra* sec. 1.4.

less true today: "The industry is led by bright, relatively young and highly ambitious scientists. One of its characteristics is the high mobility of top-flight employees."[25] In the past five years the industry has also become increasingly litigious over intellectual property claims.

Companies in the semiconductor industry vary in size, but in general, they are very capital intensive. It takes a large level of investment to produce, test and assemble finished chip products. Some of the smaller companies in the business position themselves to design chips for more specialized markets.

Computer scientists, software designers and programmers develop software products. The primary means of protecting these products are copyright, trade secret, and very carefully negotiated contracts and licenses. Software companies can be very small operations. Producing software takes many person hours, but it can be done with very little office space and equipment. There are many software producers who operate from their homes. Software workers can work on a common project even when they are widely dispersed geographically, because their work is done on computers that can be woven together easily in a network by telephone lines and modems.

Software producers market their products in different ways, based on the nature of their products. Programs that are intended for immediate consumer use "off the shelf" are distributed by direct mail or by retail outlets.[26] Customized products are marketed to large or specialized users. The *Whelan* case involved an example of the latter, the distribution of the dental management program to dental laboratories with specific needs.

The companies making assembled computer products range from large to small. Their products combine software and hardware and range over a broad spectrum. Their inventive work is likely to involve all the different forms of intellectual property. The major companies, such as IBM and Apple, set de facto standards based on their operating systems.[27] This occurs because people who

25. Motorola, Inc. v. Fairchild Camera & Instrument Corp., 366 F. Supp. 1173, 1177 (D.C. Ariz. 1973).

26. One can say that these products are "sold" in these manners, but that is a misnomer, as every effort is made to distribute only by license, as the additional restrictions that can be imposed by license are more stringent than those created by copyright standing alone.

27. Operating systems comprise the group of programs necessary to control and direct the computer's basic operations, such as getting the computer to store, retrieve and process information. An Apple operating system is described by the court in Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1244 n.4 (3d Cir. 1983). Today most operating

buy computers want their computers to easily work with other computers, and they want broad access to various applications programs.[28] Whether two computers are able to work together (are "compatible") and whether a program will run on a computer, both depend on the operating systems of the computers involved. As a result, much legal work is devoted to licensing related to operating systems.[29] Considerations related to limited licensing arrangements are discussed below in section 1.8.

1.7 Biotechnology

Biotechnology presents a relatively new environment for intellectual property. In *Diamond v. Chakrabarty*,[30] the Supreme Court decided that the invention of a new genus of a bacterium was patentable subject matter.[31] The specific invention claimed was a human-made, genetically engineered bacterium that was capable of breaking down components of crude oil. It was thus expected to be useful in dealing with oil spills.[32]

The decision was five votes to four. The reasoning of the majority and dissent showed a very deep division. The majority emphasized that the intent of the 1952 Patent Act was to include as patentable subject matter "anything under the sun that is invented by man."[33] The dissenters urged that "the patent laws attempt to reconcile this Nation's deep seated antipathy to monopolies with the need to encourage progress."[34] They argued that Congress had extended patent protection only to a very limited class of human-made biological inventions when it enacted the Plant Patent Act in 1930 and the Plant Variety Act in 1970. The dissenters concluded:

> [T]he Court's decision does not follow the unavoidable implications of the statute. Rather it extends the patent system to cover living material even though Congress plainly has legislated in the belief that section 101 does not encompass living organisms. It is the role of Congress, not this Court, to broaden or narrow the

---

systems are stored in a ROM (Read Only Memory) included in the computer's central processing unit.

28. They want computers that are "compatible" with or which "interface" with other computers. For example, a business worker may want to be able to take floppy disks back and forth from the office and do some of the work at home. The ability to do this depends on the compatibility of the home computer with those at the office.

29. Denial of access to such an operating system was the basis of the litigation in Digidyne Corp. v. Data General Corp., 734 F.2d 1336 (9th Cir. 1984). *See infra* sec. 1.8.

30. 447 U.S. 303 (1980).

31. *Id.*

32. *Id.* at 305.

33. *Id.* at 309.

34. *Id.* at 319.

> reach of the patent laws. This is especially true where, as here, the composition sought to be patented uniquely implicates matters of public concern.[35]

The division within the Court indicates a degree of controversy that will most likely be revisited in the future in the courts and in Congress.[36]

Biotechnology promises to have a growing effect in industries related to human health care, drug development, and testing. A summary of some recent developments will help provide a background for the intellectual property environment and its challenges.[37]

In the late 1980's a Stanford University researcher, Mike McCune "invented" a laboratory mouse that was useful for testing drugs that would act on the human immune system. In essence, the invention was to introduce a human immune system into a known mutant strain of mice born with severe combined immunodeficiency (SCID). The method he used was physically transplanting human fetal thymus glands and lymph nodes into individual SCID mice, producing what is called the SCIDhu mouse. The result was to create an animal which could be used experimentally for studying the HIV virus (human immunodeficiency virus) which is implicated in human AIDS (acquired immunodeficieny syndrome). McCune left Stanford and set up his own company called SyStemix in 1989. SyStemix produces SCIDhu mice and continues in the direction of McCune's work.

Also in the late 1980's, two researchers at Harvard, working in conjunction with the Du Pont corporation, produced a genetically altered mouse that is predisposed to developing cancer, called an "oncomouse" or the "Harvard Mouse". The mouse was produced by inserting a human oncogene into a mouse embryo. In 1989 the United States Patent Office granted a patent to Harvard.[38] The patent states broad claims covering any "transgenic nonhuman mammal all of whose germ cells and somatic cells contain a recombinant activated oncogene sequence" which has been introduced.[39] The

35. Diamond v. Chakrabarty, 447 U.S. 303, 321 (1980).

36. *See* Animal Legal Defense Fund v. Quigg, 710 F. Supp. 728 (N.D. Cal. 1989) (Noting the dismissal of a suit brought challenging a rule issued by the U.S. Patent and Trademark Office stating that animals are patentable subject matter), *rev'd*, 900 F.2d 195 (9th Cir. 1990).

37. *See also* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 4.4.

38. U.S. Patent No. 4,736,866, Apr. 12, 1988, "Transgenic Non-Human Mammals," Leder et. al; *see supra* sec. 1.13.

39. U.S. Patent No. 4,736,866., Apr. 12, 1988, "Transgenic Non-Human Mammals,"

European Patent Office reportedly rejected a patent on the mouse.[40]

In July 1990, the Recombinant DNA Advisory Committee, a federal government panel, approved experiments on therapies for treating human diseases by inserting genes into human cells. One of the two therapies would treat a rare form of immune disorder in children, and the other would treat certain skin cancers. The Chairman of the Advisory Committee said, "Medicine has been waiting for this kind of therapy for thousands of years."

Some biotech inventions related to health care, drugs, and testing are likely to involve quantum scientific leaps of the kind indicated by these recent developments. The practitioner is likely to work with inventors to whom the notions of protecting new developments by legal means are foreign. The research may reach across several disciplines, and the attorney will be challenged to gain a working understanding of these different areas. Universities are likely to be involved, so that it will be important to examine university policies and employment contracts.[41]

Biotech start-up companies may face simpler issues concerning other companies' patent claims and the need for licensing. If the company is moving forward with a clear, new direction, such as the gene insertion techniques which will be researched pursuant to the Advisory Commitee recommendation, then the prior art is likely to be limited. Prior art can be readily checked by a patent law office, and this effort probably should be taken.[42] The opportunity for moving into an area completely unencumbered by others' patent claims may be present.

On the other hand, if a patent does exist covering certain techniques, it is likely to be broad. Consider, for example, the patent on the "Harvard Mouse." The Du Pont corporation owns the rights to exploit the mice commercially, and it faces a number of choices. The current oncogene strain mice sell for about fifty dollars each. Since these mice can be easily reproduced sexually at places other than Du Pont, the company has had to decide whether to restrict sales to one sex or to sterile mice. According to one report, Du Pont has rejected both these approaches and has decided "to rely on the honor system and on the fact that workers often need to be certain their mice are genetically uniform."[43] It should be noted

---

Leder et al, col. 9, l. 35; *see also* Corcoran, *A Tiny Mouse Came Forth*, SCI. AM., Feb. 1989, at 73.

40. Dickson, *No Patent for Harvard's Mouse?*, 243 SCI 1003 (Feb. 1989).

41. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.4, 2.19.

42. *See supra* sec. X.

43. Cocoran, *A Tiny Mouse Came Forth*, SCI. AM., Feb. 1989, at 73.

that the "honor system" can be readily bolstered by an appropriately drafted sales or licensing agreement.

A second and more pervasive issue is presented by the "Harvard Mouse" patent. If the construction of the claims is broad, its owners may have the capacity to block or license other potential inventions in the genetically altered animal fields. The legal advisor for a new successor venture will have to study the patent and make an appropriate determination so that the new inventor or company can proceed on firm ground. The *Scientific American* reported that Du Pont has considered this question and has a current policy that encourages cooperation with other investigators by requesting a nominal licensing fee.[44] Du Pont's oncomouse product manager, Andrew S. Foreman, is quoted as stating, "we don't want to impede research."[45]

The term "biotechnology" can be viewed as an umbrella that covers a range of related areas. The common aspect of most of these technologies appears to be manipulation of the basic genetic structures of living things. One suggested definition is "the full range of technologies available due to progress in the mapping of proteins, including recombinant DNA, RNA, cell fusion, etc."[46] Two legal counsel for Monsanto Agricultural Company have observed that "the term 'biotechnology' is ambiguous, and the lack of consensus on what it means has been the source of much confusion."[47] A fast growing collection of law review articles offers help in understanding the legal issues relating to this field.[48]

Biotechnology is taking strides in certain areas, but the field will also create incremental changes and improvements. While biotechnology inventions will often relate to health care, many inventions will focus on other areas, as, for example, the use of the bacterium in the *Chakrabarty* case. Also, biotechnology developments will likely combine with other technologies, such as the computer related technologies.

---

44. *Id.*

45. *Id.*

46. Brannigan, *Biotechnology: A First Order Technico-Legal Revolution*, 16 HOFSTRA L.REV. 545, 545 n.2 (1988).

47. Withers & Kenworth, *Biotechnology-Ethics, Safety and Regulation*, 3 NOTRE DAME J.L. ETHICS & PUB. POL'Y 131, 131 (1987).

48. Some references are: Oehsen III, *Regulating Genetic Engineering in an Era of Increased Judicial Deference: A Proper Balance of Federal Powers*, 40 ADMIN. L.REV. 303 (1988); Burk, *Copyrightability of Recombinant DNA Sequences*, 29 JURIMETRICS J. 469 (1989).

1.8 The Relation of the Invention to the Company's Market

The counselor needs to guide his client in considering the questions: Will the invention be licensed to others or retained for exclusive in-house use? If licensed, how broadly will the licenses be offered? If not intended for licensing, would it be better to forego patenting and retain the invention as a secret?

The way the company uses the invention and the way the invention relates to the company's markets influence these choices. Some examples will explain this relationship.

Use for Production Only

Assume a producer of microwave products invents a piece of software that aids in the design of its products. It does not market software, and the software gives great advantages over competitors in the microwave business. The inventing company may choose to keep the software completely secret or license it only to a very few, under a carefully crafted agreement restricting its applications. Since the matter is software, it achieves copyrighted status once it has been recorded in some fashion. The company may decide to delay registration until the need to seek enforcement arises.[49]

Another example is a semiconductor manufacturer that has invented a new method for testing its products. The invention may save hundreds of hours of labor, provide greater precision, and cut the cost of materials. The inventing company, however, may realize that if the basic idea is released, others may be able to gain insights and improve their procedures. That would compromise the comparative advantages gained by the invention. Patent protection may not prevent this result. The company may decide not to seek patent protection and to protect it by trade secret alone or to give very limited licenses.

Another possible approach for this last example is to pursue the patent application process, but delay the decision of whether to accept the patent until a patent is issued. At that time, counsel and client can examine the scope of the allowed claims and compare them with the desired manufacturing advantages. After that examination, the company can decide whether to pay the patent fee, perfect the patent, and, consequently, disclose the patent and the complete file wrapper. If the company decides not to perfect the issuance of the patent, it will rely on the Patent Office not to dis-

49. *See* 17 U.S.C. §§ 102, 104, 408, 411 (1988).

close the application.[50]

These situations are examples in which an invention provides great advantages, but the client chooses to keep the invention strictly in-house. The client may make this choice with regard to any kind of invention. The invention may save labor, cut material costs, speed up production, or improve quality. It may be a machine, a piece of software, or a method of handling materials. The factor that tips the balance in favor of strict in-house use is the fact that the company does not itself market products that include the invention. The invention only assists the company in achieving other marketplace goals.

GUIDELINE SEVEN

IF THE COMPANY DOES NOT MARKET A PRODUCT THAT EMBODIES THE INVENTION, IT WILL USUALLY BE BEST TO CHOOSE INTELLECTUAL PROPERTY PROTECTION THAT MOST FULLY PROTECTS STRICT IN-HOUSE USE. THIS WILL OFTEN BE TRADE SECRET PROTECTION.

Limited Licensing

Limited licensing is a choice that is very closely related to strict in-house use. An inventing company may determine that the primary benefits flow to it when it preserves use to itself, but that it is wise to have another company available to serve as a second source of products made by use of the invention. In such a case, the company may decide to license the process to another company with certain specific conditions or restrictions.[51]

The law generally permits one to decide the conditions of licenses, but counsel must bear in mind antitrust considerations. For example, in the *Digidyne* case[52] the Court reversed a judgment based on defendant Data General's motion for judgment notwithstanding the verdict. The plaintiff had claimed that the defendant's refusal to license use of its copyright protected RDOS operating system except when linked to purchase of its NOVA central

50. 35 U.S.C. § 122 (1988) provides that, "[a]pplications for patents shall be kept in confidence." Logically the secrecy should be preserved if no patent issues. Hyde Corp. v. Huffines, 158 Tex. 566, 314 S.W.2d 763 (1958), *cert. denied*, 358 U.S. 898 (1958); Sears v. Gottschalk, 502 F.2d 122 (1st Cir. 1974), *cert. denied*, 423 U.S. 885 (1975).

51. Motorola and Hitachi created such an arrangement which was ultimately litigated in Motorola, Inc. v. Hitachi, Ltd., Nos. A-89-CA-268, A-89-CA-481 filed (W.D. Tex. March 29, 1990).

52. Digidyne Corp. v. Data Gen. Corp. 734 F.2d 1336 (9th Cir. 1984), *cert. denied*, 473 U.S. 908 (1985).

processing units (CPUs) was an unlawful tying arrangement. The Court determined that "the jury reasonably could have concluded that defendant's RDOS was sufficiently unique and desirable to an appreciable number of buyers to enable defendant to force those buyers also to buy a substantial volume of defendant's NOVA instruction set CPUs they would not have preferred to buy."[53] The Court further stated that a tying arrangement constitutes a per se antitrust violation under the following conditions:

(1) the purchase of one product (tying product) is tied to purchase of another (tied product), and

(2) there is exercise of sufficient economic power to restrain competition appreciably in the tied product, and

(3) there is an effect upon a substantial amount of commerce in the tied product.[54]

Licensing arrangements that dictate economic activity which extends beyond the use or recompense of the thing licensed should be reviewed for antitrust implications.[55] With regard to a patent, a patentee is generally entitled to license to others at more or less any price and to pick and choose among potential licensees. There are doctrines that provide some limited recourse against patent holders.[56]

---

53. *Id.* at 1341.

54. *Id.* at 1338; *see also*, Annotation, *Provisions of Franchise Agreement as Constituting Unlawful Tying Arrangements Under Federal Antitrust Laws*, 14 A.L.R. FED. 473 (1973); Annotation, *What Constitutes Separate and Distinct Products or Services for Purposes of Determining Whether Tying Arrangement Violates § 1 of Sherman Act (15 USCS § 1) or § 3 of Clayton Act (15 USCS § 14)*, 46 A.L.R. FED. 516 (1980).

55. In 1988 Congress amended 35 U.S.C. § 271 (1985) to specify that a patent owner shall not be denied relief for refusing to license or use a patent, or for conditioning a license or sale of a patented product on "the acquisition of a license to rights in another patent of purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned." The amendment, in effect, codifies the *Digidyne* ruling as applied to patents. There are also doctrines of patent law that provide remedies against patent holders who abuse their position. These include: (a) the doctrine of misuse, 4 CHISM, PATENTS § 19.04[1], at 19-91 (1978), (b) inequitable conduct, *Id.* § 19.03 at 19-47. The seminal case in this area of law is Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172 (1965).

56. 4 CHISUM, PATENTS, § 19.04[3] (1978); Handgards, Inc. v. Ethicon, Inc., 743 F.2d 1282 (9th Cir. 1984); Annotation, *Bringing of Patent Infringement Suit as Violation of §§ 1 and 2 of Sherman Act (15 U.S.C. §§ 1,2)*, 62 A.L.R. FED. 203 (1983). "There are some exceptions to [the patentee's] plenary control over licensing, but they are so confined that they surely confirm the general rule." Anawalt, *To License or Not—A Proposal to Improve Patent Law*, 5 SANTA CLARA COMPUTER & HIGH TECH. L.J. 199, 200 n.3 (1989).

GUIDELINE EIGHT

LICENSES THAT ARE HIGHLY SELECTIVE OR THAT IMPOSE SEVERE RESTRICTIONS ON FIELD OF USE SHOULD BE REVIEWED FOR ANTITRUST IMPLICATIONS.

License All-comers

The inventing company may choose to license very broadly. The company might choose to do so in order to gain royalty income or good will in the market place. It might also choose to do so for public policy reasons, such as the recognition that the technology ought to be shared widely. Sometimes a broad licensing policy will enhance a company's own strength, because to do so creates or serves a market which the company is prepared to serve. The choice among sole proprietary use, limited, and broad licensing is linked to market considerations. The general rule is that the relation of the invention to the inventing company's actual market will tend to determine whether and how broadly it will license.

1.9 Trademark

In this book we explore the types of intellectual property that protect an invention in itself. Nevertheless, we must emphasize the importance of trademark! Once products containing inventions enter the marketplace, some of the greatest market value is achieved not by the underlying invention, but by name recognition. Thus, counsel should alert clients to the use of trademarks, service marks, trade dress, and related legal means to protect the name and identification of products. "IBM," "Coca Cola," "Head"—the whole range of commercial names that are known to have value in themselves. Also, advertising copy is copyrighted as soon as it is fixed into a medium of expression, and it may be useful on occasion to take action to protect its copyright. We simply remind the practitioner not to overlook this important area.

GUIDELINE NINE

ALERT CLIENTS TO THE IMPORTANCE OF TRADEMARKS AND RELATED MEANS OF PROTECTING GOODWILL AND NAME RECOGNITION.

1.10 Understanding the Technology

Einstein and Infeld wrote an excellent and easily understandable book explaining the evolution of modern physics. They called the book a "simple chat" that would "give the reader some idea of

the eternal struggle of the inventive human mind for a fuller understanding of the laws governing physical phenomena."[57] Counsel should have such a "simple chat" with the inventors in order to understand:

(a) The *invention* itself—what it does, and therefore, how it might be protected;

(b) the relation of the invention to existing technologies and the *use or market* for those technologies;

(c) the overall *value* of the invention—why it should be protected, and what choices might be made among protections;

(d) whether and how to acquire or grant technology by *license*, and what terms of licensing are appropriate. In addition, it is often essential to understand technology in order to understand intellectual property law. For example, it is necessary to have a grasp of computer technology to understand the limits of copyright and patent as applied to computer processes.

GUIDELINE TEN

TECHNOLOGY DETERMINES LEGAL CONSEQUENCES. COUNSEL MUST UNDERSTAND AN INVENTION'S TECHNOLOGY IN ORDER TO PROTECT IT, TO ASSIST IN MARKET DECISIONS, AND TO GRANT OR ACQUIRE LICENSES ON APPROPRIATE TERMS.

There are three aspects of technical understanding. One is the language that an inventor uses. Another is the concepts that drive the invention. When the attorney grasps how an invention works, he or she can work effectively to answer the inventor's or management's questions.

The third aspect of technical understanding is familiarity with the inventor's environment and general approach to work. Scientists, engineers, and other inventors work in differing circumstances. A chip designer, for example, may work with a computer graphic workstation to lay out and test feasible alternatives for the circuits she will ultimately include in a chip. Her work product will eventually be printed out by a large computer driven printer called a plotter. Photographic and etching processes will transform her work into a tiny network of electronic paths on a silicon chip. Throughout the design process, she knows that the physical capacities of producing a chip dictate what she can do in the design process. The

57. A. EINSTEIN & L. INFELD, THE EVOLUTION OF PHYSICS, xvi (1961).

entire environment of her workplace and the constraints of the industry influence her work. The importance of the environment can be compared to an experienced trial lawyer's understanding of impact of the court room atmosphere. The attorney knows that the appearance of his client, the demeanor of witnesses, the attitude of the judge, and the length and tedium of jury instructions all influence the outcome of a case.

We now look briefly at three sample fields of invention to get a flavor of their language, concepts, and environment.

1.11 Understanding Computer Technology

As we have seen, the modern computer is the marriage of the integrated circuit and programming.[58] Let us examine a software patent as a means of understanding this technology. The patent is entitled "Protection of Data File Contents." The patent is for:

> An improved arrangement for controlling access to data files by computer users. Access permission bits are used by the prior art to separately indicate permissions for the file owner and nonowners to read, write, and execute the file contents. An additional access control bit is added to each executable file. When this bit is set to one, the identification of the current user is changed to that of the owner of the executable file. The program in the executable file then has access to all data files owned by the same owner. This change is temporary, the proper identification being restored when the program is terminated.[59]

The general field it applies to is protecting data in computerized data bases by limiting the amount of information that is given to identified users. For example, the invention could limit the particular files of information that an attorney could peruse in a system like WestLaw or Lexis.

Existing means of computerized data protection include user identification codes, but the patent states that these codes do not allow for sufficiently fine distinctions to be made as to what information may be released within the database. Users may be entitled to some, but not all, of the information. The invention provides a means for "special purpose data file access."[60]

The solution to the need for special purpose access is the crea-

58. *See supra* sec. 1.6.

59. U.S. Pat. No. 4,135,240, Jan. 16, 1979, "Protection of Data File Contents," D. Ritchie.

60. "A shortcoming of [the existing art] is its lack of ability to include fine distinctions of access purpose . . . . The present invention adds a facility to the basic scheme . . . which permits computer users to access a data file for any specific purpose." *Id.* at col. 1, l. 64.

tion of a new type of identification code for all those persons who have permission to access the system. The new code has one extra "bit" of information in it which in effect can "throw a switch"[61] allowing preset limitations on access to operate within the data base itself. Since the actual owner of the data file can set and reset the limits which are triggered by the thrown switch, it is able to control and modify the degree of access at any time.[62]

To understand the patent and the domain in which it operates, one must understand its language. The patent is, in effect, "decoded," when we understand the terms used. If you glance back at the abstract you will see the terms of art. It is set forth again, with special terms italicized:

> An improved arrangement for controlling *access* to data *files* by computer users. Access permission *bits* are used by the prior art to separately indicate permissions for the file owner and nonowners to *read, write, and execute* the file contents. An additional access control bit is added to each executable file. When this bit is *set to one*, the identification of the current user is changed to that of the owner of the *executable file*. The *program* in the executable file then has access to all data files owned by the same owner. This change is temporary, the proper identification being restored when the program is terminated.

The italicized words are used by computer professionals to describe the operations that take place when information is used and stored in a computer. In computer language: Data is written in bits in files. When the program is accessed and executed, the data is read and perhaps rewritten or altered. These sentences are very close to common parlance: Information is stored in small pieces in electronic files. When a user gains access to a program containing the information, the user is able to read or change the information.

The computers we use are "digital computers." "A digital computer is a machine capable of performing operations on data

---

61. It is, of course, the electronic equivalent of "throwing a switch." This electronic "switch" is called a "set user identification bit (SUID bit)." "The user ID which is stored by the computer and is effective to control subsequent file access is changed whenever a stored file containing an executable program (excutable file) is loaded into computer memory for execution and whenever the associated SUID bit is set to one." *Id.* at col. 2, ll. 36-42.

62. The patent goes on to explain the complete methodology for the operation: In effect the authorized user is temporarily changed into the temporary owner of the data base, but the program controlling is now modified to allow only certain aspects of it to execute. "During the execution of the program, therefore, the current user appears to be the owner of the executable file and all the data files accessible to the owner of the executable file . . . the program will operate to do, . . . restricting access in any manner intended by the program designer." *Id.* at col. 2, ll. 43-51.

represented in digital or number form."[63] The process of storing and using information in a computer is based on breaking information down into "bits." A "bit" is the smallest increment of information in a digital system; "a blend word formed from *binary digit*."[64] A bit of data is represented by the presence or absence of a charge in an electronic circuit, or the magnetic state in a recording medium, such as a floppy disk.[65] The language used by computer professionals is devised to describe all the operations and utilities used in manipulating data in binary form in a computer.

An attorney can gain an understanding of the language of computers by consulting basic texts or even a good general encyclopedia. More specialized knowledge can be gained by examining trade journals for the computer and electronic industries. Michael Hordeski, the author of a dictionary of microelectronic terms comments:

> A major problem with any new revolutionary technology is the nomenclature. In a fast-moving explosive field such as microcomputers, terms and concepts develop with the technology, and the field soon has its own unique language. . . . Some of the terms . . . represent new words, while others are words that have whole new meanings, which started in professional writing and communications and spread to a more common current use. Other terms may have had informal origins in the conduct of daily business and may be defined as the jargon or slang confined to special groups and situations.[66]

Anthony Chandor's book, *The Penquin Dictionary of Computers*, contains a series of entries and articles that explain certain basic processes conceptually.[67]

Now let us take a look at this specialized language in the context of some computer patent cases. For nearly twenty years the federal courts have wrestled with the extent to which computer processes can be protected by patent.[68] In general, there is no difficulty with creating patent protection for the hardware itself.[69] The

---

63. A. CHANDOR, THE PENGUIN DICTIONARY OF COMPUTERS 144 (3d ed. 1985).

64. M. HORDESKI, THE ILLUSTRATED DICTIONARY OF MICROCOMPUTERS, 25 (2d ed. 1986).

65. A "bit" is "extended to the actual representation of a binary digit in different forms, e.g. an element of *memory*, a magnetized spot on a recording surface, a pulse in an electronic circuit." A. CHANDOR, *supra* note 63, at 55.

66. M. HORDESKI, *supra* note 64, at vii.

67. For a list of these topics, see A. CHANDOR, *supra* note 63, at 11.

68. *See* Gottschalk v. Benson, 409 U.S. 63 (1972); Parker v. Flook, 437 U.S. 584 (1979); and Diamond v. Diehr, 450 U.S. 175 (1981); the trio of Supreme Court cases on the subject.

69. *See supra* sec. 1.6 regarding the relation of hardware to software.

problem lies with protection of the programming that commands or directs the execution of a process carried out by the machine. In essence, the question presented is whether these processes of handling information can be patented *in isolation from* the machine or process they govern. The answer *appears* to be that they cannot be protected in isolation.[70] That answer must be cushioned by the recognition that attorneys can make skillful and well supported arguments to bring computer processes within the scope of the patent laws by demonstrating that these processes do not really operate "in isolation."[71]

In patent law terms, the question is whether a program in isolation is "patentable subject matter," that is, whether it is within the scope of 35 U.S.C. section 101.[72] The key problem in the dispute is the fact that programs are simply step by step processes for solving problems. A "program" is "a set of instructions for solving a given problem by computer."[73] An "algorithm" is "a series of instructions or procedural steps for the solution of a specific problem."[74] The Supreme Court has stated that an algorithm "cannot be the subject of a patent."[75] The algorithm must be applied in a process rather than claimed in itself as the subject of a patent. It is similar to saying that you cannot obtain a patent for a cake recipe,[76] but you might get one for a particular *applied* procedure that actually combines ingredients or bakes cakes.

In *In re Grams*,[77] the Federal Circuit reiterated an approach which has been used to separate the patentable from that which is not:

> Once a mathematical algorithm has been found, the claim *as a whole* must be analyzed. If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between the physical elements of the claim (in apparatus claims) or to refine or limit claim steps (in process claims), the claim being otherwise statutory, the claim passes muster under § 101.[78]

---

70. *See In re* Grams, 888 F.2d 835 (Fed. Cir. 1989).

71. The key problem in the dispute is the fact that programs are simply step by step processes for solving problems.

72. Under section 101, patentable subject matter includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101 (1988).

73. A. CHANDOR, *supra* note 63, at 362.

74. A. CHANDOR, *supra* note 63, at 31.

75. Diamond v. Diehr, 450 U.S. 175, 186 (1981).

76. A recipe is, after all, simply a step by step process for producing a cake.

77. 888 F.2d 835 (Fed. Cir. 1989).

78. *Id.* at 838 (quoting from *In re* Walter, 618 F.2d 758, 767 (C.C.P.A. 1980)).

The Court appeared to reserve the question of whether a patentable process must find its procedure or system definitely linked to resolution of a physical process, stating: "Whether section 101 precludes patentability in every case where the physical step of obtaining data is the only other significant element in mathematical algorithm-containing claims is a question we need not answer."[79] Determining patentability of an information process depends on what that process does. Realistically, it depends *on the language used* to describe the process. In *In re Grams* the process claims were rejected. The claims were for a process that would be able to determine whether any complex system (such as a biological organism) was in a normal state. The claims as stated disclosed only a method of analyzing data, plus the need for a physical process step to gather data. That was not enough, the court determined. The applicants in essence claimed the algorithm; "the presence of a physical step in the claim to derive data for the algorithm [could] not render the claim statutory."[80]

In re Iwahashi[81] presented a strikingly similar invention, yet one which achieved patentability. The invention in *Iwahashi* also claimed the application of an algorithm; the use of mathematical formulae to compute necessary numbers (coefficients) used in voice recognition. As in *Grams*, the primary action of the invention was on data, some of which was gathered from external inputs, that is, voices. However, in stating the claim, the patent constantly referred to the specific ways in which the algorithm was used in the configurations of a computer hardware based process. "The claim as a whole certainly defines apparatus" rather than information alone subjected to a formula."[82]

Counsel who face inventions that are close to the line between *Grams* and *Iwahashi* need to ferret out the technical differences that may yield patentability. The cases also indicate that the language chosen to describe the claims may make a difference in the determination. If patentability cannot be achieved, or if it appears unlikely, counsel must consider other options. Will copyright accomplish the desired results? Would trade secret be better? If trade secret pro-

79. *Id.* at 840. In Diamond v. Diehr, 450 U.S. 175 (1981), the Supreme Court determined that a process using a mathematical formula as its principal feature was patentable subject matter where the use of the formula was integrated in a process that used the formula to open a rubber curing press. The equivalent integration for a computer program can be said to be the program's direct governance of the flow of electricity within the hardware.

80. 888 F.2d at 840.

81. 888 F.2d 1370 (1989).

82. *See id.* at 1375.

tection is chosen, it is critical to know and use the language of invention in order define the secret adequately.[83]

Definition of the invention is critical in licensing. The rights that are granted and those that are withheld need to be described in specific terms relative to the invention. There are different ways to include these provisions in the license. One way is to state in the body of the document that the license is for "the invention described in Appendix A." Another approach is to define the license terms in a definitions section. Performance levels and capabilities may need to be specified as well. The accuracy of the terminology employed will determine the efficacy of the license or other agreement.

GUIDELINE ELEVEN

THE INVENTION RIGHTS GRANTED AND THOSE WITHHELD SHOULD BE SPELLED OUT IN SPECIFIC TERMS IN ANY LICENSE OR GRANT BACK DOCUMENT.

1.12 Understanding Semiconductor Technology

The miniaturization, increase of speed, and decrease in power consumption afforded by semiconductor technology propel industry the way that the steam engine drove industry more than a century ago. Semiconductor technology has greatly influenced the pace and development of all of our current high technology.[84]

The pace of change of these technologies is indicated by the "Foreword" of the *Digest of Technical Papers* for the 1990 International Solid-State Circuits Conference (ISSCC).[85] Every year the ISSCC attracts thousands of the leading researchers and developers in this dynamic field. The "Foreword" says:

> As has been the trend for many years, change continues, with new records being set in chip performance, density, and size. Several records are presented in non-volatile and static memory performance and density, RISC processors with higher thruput rates, improved performance analog circuits, and ASIC's with additional flexibility. This year we also note the practical application of neural networks and Josephson junction circuits. Nearly a third of the papers use BiCMOS and submicron CMOS

83. *See* H. ANAWALT & E. ENAYATI, *supra* note 1.

84. The effects of the semiconducter capabilities have reached everywhere. The use of the computer has changed research methods in all the other fields, and the computer itself is made possible by the microcircuit.

85. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, 1990 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE DIGEST OF TECHNICAL PAPERS, Feb. 1990.

technologies.[86]

Let us set out the paragraph again with the special words or usages italicized:

> As has been the trend for many years, change continues, with new records being set in *chip performance*, *density*, and *size*. Several records are presented in *non-volatile* and *static memory* performance and density, *RISC processors* with higher *thruput* rates, improved performance *analog* circuits, and *ASIC's* with additional flexibility. This year we also note the practical application of *neural networks* and *Josephson junction* circuits. Nearly a third of the papers use *BiCMOS* and *submicron CMOS* technologies.

Definitions of some of the italicized words are:

> "Chip." "A silicon slab selectively doped with impurities so that passive and active devices, circuit paths, and device interconnections are formed within the solid structure."[87] In essence, a chip is a very tiny piece of silicon filled with circuits of all different types. Imagine a large building filled with wires, switches, capacitors, and other electric components which has been compressed down to a little slab one third the size of your little finger nail and you have the image of a chip.
>
> "Performance." This word has much the same usage as in any other field, but here refers primarily to speed.
>
> "Density." Density refers to the compactness of the chip structure. In general, the more that circuitry can be squeezed into a small area, the less that power is consumed and the more performance is enhanced.
>
> "Memory." Memory refers to a medium for storing information in the form of electronic pulses or magnetic form. "Non-volatile" memories are those which do not lose their information when electric power is shut down.
>
> "Processor." This word has a variety of meanings, but here refers to chips that perform logical or analytical functions. A "RISC" processor is a Reduced Instruction Set Chip logic type device that operates on fewer software instructions. "ASIC's" (Application Specific Integrated Circuit) are chips designed to do a specific function, rather than a variety of functions. CMOS (Complementary Metal Oxide and Semiconductor) BiCMOS are particular ways of building chips. A key function of these two technologies is their ability to operate on lower power.

86. Gwin, *Foreword—A Year of Change*, DIGEST OF TECHNICAL PAPERS, Feb. 1990.

87. M. HORDESKI, *supra* note 64, at 43.

Armed with these definitions, the Foreword becomes understandable.

One can gain some basic familiarity with semiconductor technology from sources such as good general encyclopedias. More detailed understanding is more difficult to obtain. College textbooks help, but learning from them can be cumbersome. Specific encyclopedias are now published, and some provide excellent guidance.[88]

The engineers themselves provide the best resource. Ask them about their work. Try to catch them at moments when you will not interrupt their work. Be willing to follow up on their explanations with some homework. Reading the trade press[89] provides detailed and up to date information.

Semiconductor development presents quantum leaps and incremental improvements. New methods of manufacture often make possible new types of devices or levels of performance. These two aspects directly influence intellectual property decisions, as we will discuss shortly.

The invention of the "floating gate"[90] is a particularly instructive example of a quantum leap in technology.[91] The floating gate is the device that allows non-volatile (permanent) memories and logic devices to be programmed electronically.[92] Prior to the invention of the floating gate, permanent memory devices, ROMs (Read Only Memory) could only be programmed at the manufacturing stage or by blowing fuses within the chip at a later stage.[93] A floating gate is a part of an active memory chip, such as a ROM, that retains the stored information by means of trapped electrons, rather than hard wiring or blown fuses. As described in the D. Khang patent, a floating gate is a means of trapping electrons in a region of a chip thus providing memory "whereby an induced electric field can be

88. *See, e.g.*,

89. *See, e.g.*, Electronic Engineerning News, Electronic Buyer's News, Electron World News, and Microprocessor Report.

90. "Gate" is defined as "a circuit or device having one output and one or more inputs with the output state completely determined by the previous states of the inputs." M. HORDESKI, *supra* note 64, at 112.

91. Thanks to Thomas Schneck, Esq., a Silicon Valley patent attorney for his assistance with the references regarding floating gate development.

92. For example, EPROMS (Erasable Programmable Read Only Memory) and EEPROMS or E2s (Electronically Erasable Programmable Read Only Memory).

93. In 1971 Dov Fohman-Bentchkowsky wrote: "Most semiconducter ROMs are programmed permanently at the integrated-circuit fabrication stage by a custom mask that defines the desired information pattern." He noted that any changes in the programming and debugging of the device would require the creation of a new mask and a new fabrication of a chip. These refabrications were expensive and of limited flexibility. IEEE J. SOLID-STATE CIRCUITS, vol. SC-6, 301-306, Oct. 1971.

maintained in the semiconductive element even after the field inducing force is removed."[94] Floating gate performance has improved and size has been reduced to make the invention increasingly useful in memory devices.[95]

An electronic gate of the type described can only be constructed when extremely thin insulating and conductive layers are created within a silicon chip. Tiny dimensions in insulating materials permit free electrons to "tunnel" from one charged area to another. The tunneling action of the electrons performs the function of the switch. A process called the "planar process" makes the small dimensions a physical possibility. The planar process entails creating very thin alternating layers of insulating material and semiconductive material, then using templates (masks) to control the implantation of impurities into the thin semiconductor layers. The impurities change the conductive characteristics of the layer. Implantation is done by very carefully controlled diffusion of gases into areas left exposed by the mask. "The introduction of the planar process in 1960 revolutionized the microelectronics field almost overnight . . . ."[96]

The process is described in a 1962 patent by J. A. Hoerni:

> The present invention provides, as integral steps in the manufacture of transistors, the control of the extent and position of semiconductor coating which serves the purpose of thereby delineating the exact lateral configuration of materials diffused in the semiconducting material and furthermore to provide a subsequent protection for the transistor surface. In accordance with the present invention it is possible not only to limit the extent of impurities diffusion . . . but furthermore . . . to provide a precisely controlled area of any particular transistor material upon a common transistor surface.[97]

---

94. U.S. Pat. No. 3,500,142, Mar. 10, 1970, "Field Effect Semiconducter Apparatus with Memory Involving Entrapment of Charge Carriers," D. Khang. Another way of understanding a floating gate is to analogize it to a switch that is switched on or off without mechanical movement. The mechanical switching is replaced by a transistor device which uses changes in electric charge of the gate. The charge in the gate portion is like a switch that is "on" or "off". When the power is shut down, the switch remains in whichever condition, "on" or "off," that it was placed during operation.

95. U.S. Pat. No. 4,203,158, May 13, 1980, "Electronically Programmable and Erasable MOS Floating Gate Memory Device Employing Tunneling and Method of Fabricating Same," D. Forhman-Bentchkosky.

96. A. GREBENE, ANALOG INTEGRATED CIRCUIT DESIGN 1 (1972).

97. U.S. Pat. No. 3,025,589, March 20, 1962, "Method of Manufacturing Semiconductor Devices," J.A. Hoerni. Transistors are electrical devices capable of the switching, detecting, and amplifying capacities of vacuum tubes, but created in a solid state. The transition is made possible by the chatacteristics of semiconducters such as silicon. Because

The invention of the floating gate memory devices ties manufacturing improvements and device advances together. As fabrication capacity improves, devices become possible. The technology itself influences legal decisions about technology protection.

GUIDELINE TWELVE

EFFECTIVE PROTECTION OF SEMICONDUCTOR INVENTIONS DEMANDS FULL UNDERSTANDING OF THE UNDERLYING TECHNOLOGY.

Legal Implications of Semiconductor Knowledge

We can now list some legal consequences of semiconductor technology:

1. *Patent* law considerations dominate semiconductor intellectual property.

2. Nevertheless, *other forms* should not be overlooked. For example, important software or production processes may be developed in conjunction with semiconductor development that are better protected by copyright or trade secret. In fact, because patent law is so obviously at the core of these developments, special attention should be paid to the other forms, as those are not so obvious.

3. *Mask works* should be registered pursuant to the 1984 Semiconductor Protection Act.[98] Yet counsel should realize that the Act offers minimal protection to the underlying inventive work. Despite the apparent limited scope, the first case decided under the Act returned a jury verdict against the infringer.[99]

4. Because device and process improvements may be incremental or represent quantum leaps, *patent policies* should contain adequate guidelines on goals. The patent policy needs to be reviewed regularly.

5. Process advances often determine what is possible in terms of design. Intellectual property officers must *relate* process protection to device protection, and vice versa.

6. Process patents are *difficult to police*. In 1988, the patent law was amended to enhance protection for process patents.[100] De-

---

of their chemical structure, these substance possess electrical conductivity greater than insulators, but less than conductors.

98. 17 U.S.C. § 901 (1988).

99. Brooktree Corp. v. Advanced Micro Devices, Inc., 757 F. Supp. 1088 (S.D. Cal. 1990). The BNA report of the case stated that the plaintiff had invested approximately $3.8 billion for development of chips that convert digital data to analog data in very high density resolution video screens. The jury had not yet determined the damages when the case was reported, but the basis for an enormous award exists.

100. *See* 35 U.S.C. §§ 271(d), 271(g) (1988).

termining infringement may require procedures such as disassembly of a competing chip and analyzing its structure to see what inferences can be drawn regarding the process necessary to produce such a structure. These considerations may cause counsel to opt for trade secret protection instead of patent.

7. Modern chips contain huge numbers of component circuits and features. Since many of these may be patented, counsel will be called upon to participate in extremely difficult decisions concerning *potential infringement claims.*

8. The complexity of devices and the effort to produce them compel companies to make careful decisions on whether and when to obtain or grant a *license.* Proposed license terms must be reviewed with care.

GUIDELINE THIRTEEN

PATENTS DOMINATE SEMICONDUCTOR INTELLECTUAL PROPERTY. EACH NEW PRODUCT BRINGS FORTH A WELTER OF POTENTIAL CLAIMS, FORCING CLIENTS TO PERFORM CAREFUL AND REPEATED REVIEW OF DEVELOPMENT AND LICENSING DECISIONS.

We close this section with a general look at the language, concepts, and environment of semiconductor development. The language is filled with electronic terminology and chemical references. You probably cannot find a single sentence in a semiconductor patent that does not use at least one specialized term. Many of these terms are used only in this inventive field. Furthermore, the field abounds with acronyms such as CMOS, ASICs, E2,[101] and the like. These terms sweep together wide ranges of concepts and are constantly employed in marketing, sales, and business transactions, as well as engineering.

Fortunately, a common concept runs through all semiconductor technology. The field is based on the control of the flow of electrons and the management of electromagnetic fields. The technologies manage these flows to create the rough equivalent of a machine's nervous system.

Electrical engineering dominates the inventive environment. Development proceeds at a very fast pace, market pressures are extreme, and the engineers are kept aware of those pressures as they

101. "CMOS", complementary metal oxide semiconducter; "ASIC", application specific integrated circuit—a chip to perform a specific assigned function; "E2" or EEPROM, electrically erasable programmable read only memory—a chip that can be reprogrammed without removing it from the computer or other device in which it is employed.

proceed with their work. These pressures make it difficult to set aside the time required for the demanding effort of working up a patent.[102] Companies vary from large to quite small, and the current competition among them is fierce. The competition has carried over to the courts, and in the last five years the industry has become one of the most litigious in the country.

Advising semiconductor companies demands the patience to understand the technology. The patent attorneys who actually draft patent applications in this field must invariably possess and be willing to acquire extremely detailed knowledge and understanding of the technology. On the other hand, attorneys who advise concerning the general intellectual property planning must combine basic understanding of technology with a broad knowledge and awareness of all intellectual property theories and their relation to industry and company needs. One fortunate aspect of these demanding tasks is that the technology is interesting in ways that make the effort easier.

1.13 Understanding Biotechnology

As noted earlier, biotechnology is a new field. It is, however, a field which is related to old fields. For centuries humans have worked in the antecedent fields of medicine, hybridization, plant grafting, and improvement of animal strains. What distinguishes current biotechnology is the fact that it reaches further into the genetic structure of organisms, directly manipulating the building blocks of life.

We now examine a recent patent as a means of presenting the language, concepts, and environment of biotechnology. In 1988 two Harvard researchers were awarded the patent for the "Harvard Mouse."[103] As stated above, the patent claims "a transgenic non-human mammal all of whose germ cells and somatic cells contain a recombinant activated oncogene sequence introduced into said mammal, or an ancestor of said mammal, at an embryonic stage."[104] All the key words in this claim except for "transgenic" and "oncogene" are found in our dictionary, and those two are easily derived from their root and prefix. The claim is broad: It claims any mammal (except a human) with altered genes with a "recombinant activated oncogene sequence" in every cell. The oncogene se-

102. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.14.

103. *See supra* note 38 and accompanying text.

104. *See* U.S. Pat. No. 4,736,866, April 12, 1988, "Transgenic Non-human Mammals," Leder et. al. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.19. This section addresses research projects done by or with Universities.

quence is introduced to the mammal or its ancestor when either was an embryo.

An "oncogene sequence" appears to be a genetic sequence which makes the animal cancer prone. In fact, the term is defined as to its use in the patent itself. "An activated oncogene sequence, as the term is used here, means an oncogene which, when incorporated into the genome of the animal, increases the probability of the development of neoplasms (particularly malignant tumors) in the animal."[105] The preferred mammal is indicated as a rodent. The invention can be briefly summed up as a cancer prone mouse, though it is literally broader than that.[106]

The patent describes introduction in the first fertilized cell (the oocyte) as the best mode of producing the altered cancer prone animal. It should be noted that patent law requires that the patent application describe not only the means of achieving the described invention, but that it also disclose the best mode of doing so.[107] The patent also discusses the uses of the mammals—to test carcinogens and protective chemicals. The test of carcinogens "can be extremely sensitive because of the propensity of the transgenic animals to develop tumors."[108] The description of the invention and its uses reveals areas of humane concern.

In general, one can read the basis of the patent with relative ease. The description of the preferred embodiments, however, is densely packed with specialized terms and knowledge. "MMTV-H3 myc (FIG. 5) was constructed in two steps: Firstly, the 4.7 Kb Hind III myc fragment was made blunt with Klenow polymerase and ligated to the pA9 SmalEcoRI vector that had been similarly treated." Whew! We will not even make a stab at that. Even though there is a concentration of genetic and chemical language and process, an overarching concept is clear from the patent—genes are transferred. Indeed, genetic alteration forms one of the core areas of this new technology.

The authors are not well acquainted with the environment of biotechnology. At the present time it appears that much of the

105. "Genome," "a complete haploid set of chromosomes" and "neoplasm," an abnormal new growth, are both in the dictionary.

106. At first glance, the great breadth of the patent indicates a fertile field for testing the limits of the patent under the "doctrine of equivalents" and its reciprocal, the "reverse doctrine of equivalents." It appears, however, that these issues will remain moot, as the invention is apparently liberally licensed. *See supra* sec. 1.7.

107. 35 U.S.C. § 112 (1988).

108. U.S. Patent No. 4,736,866, Apr. 12, 1988, "Transgenic Non-Human Mammals," Leder et. al, col. 3, ll. 19-21.

work in the field is done at universities or in connection with them. Old-line companies and start-ups are both entering the field. It is a field that is likely to be favored by research funds, as it is one that addresses itself to new frontiers of health care and health maintenance.

We offer the following initial observations about the likely legal environment of biotech:

1. Like semiconductor technology, intellectual property will be very *patent* oriented. It appears that process or production technology is more likely to be protected effectively by patent.

2. *Government* will influence the development of the technology, because of the basic questions that it will press upon society. The technology does not simply pose technical concerns; it holds forth possibilities of changing life, including the definition of human individuality by such means of prenatal gene transfer. If one can alter the genes of a mouse, why not those of a human?

3. *Quantum leaps* will gain the spotlight initially, but applications and incremental steps will soon be of great importance. Because of the tendency to pursue the large picture in this field, the intellectual advisor may need to alert clients to the ability to protect smaller scale developments.

4. Public interest in matters of health may compel new *access* rights to the technology. For example, courts and legislatures may impose constraints on patent and trade secret rights.

GUIDELINE FOURTEEN

BIOTECHNOLOGY WILL BE PATENT ORIENTED. PUBLIC CONCERNS REGARDING HEALTH WILL PREDICTABLY STIMULATE LEGISLATION AND PRECEDENTS CONCERNING ACCESS RIGHTS AND NECESSARY CONTROLS ON ASPECTS OF THE TECHNOLOGY.

The field imposes large demands that the practitioner become educated in technical concepts. For the person practicing as an advisor to this industry, the demand to learn more will never cease. The very same thing should be said concerning computer and semiconductor development.

The industries demand attorneys with more and more specialized technical knowledge. This leads to a final observation related to technological expertise of lawyers: Expertise is useful and to a degree necessary, but it should not divert the attorney or client from attention to the true role of the attorney which is to allow the technology to be protected and fit into the legal demands posed by soci-

ety. The attorney is *required* to think and inquire broadly. Thus, the intellectual property advisor will disserve clients by forcing himself into a view that is too narrow or technological.

GUIDELINE FIFTEEN

THE ADVISOR MUST GAIN TECHNICAL UNDERSTANDING, YET NOT ALLOW DETAIL OR A FALSE SENSE OF TECHNICAL EXPERTISE TO DOMINATE THE LEGAL WORK. EFFECTIVE LEGAL ADVICE DEPENDS ON LOOKING AT A BROAD SET OF VARIABLES, OF WHICH THE TECHNICAL IS AN IMPORTANT SUBSET.

1.14 The Engineer's Notes and Notebook

Priority may become a critical issue in patent litigation or in an interference procedure before the Patent Office.[109] The issue concerns which of two or more claimants is entitled to be considered the first inventor. Section 102(g) of the Patent Act provides that a patent applicant shall be entitled to a patent unless "before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it."[110] The section provides a rule for determining priority: "In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other."[111]

The critical concepts of priority are reduction to practice, conception, and due diligence. In general, the first person to reduce an invention to practice is entitled to the patent, unless someone else conceived of the invention before he did, and that person exercised due diligence to reduce it to practice.[112] Conception means the formation of a definite idea of the complete invention—one crystallized in all its essential attributes.[113]

The invention and patent process can be visualized on the fol-

109. *See* 35 U.S.C. § 135 (1990), regarding the interference process.

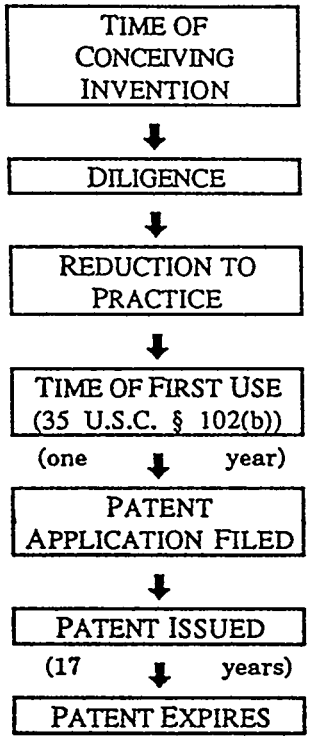
110. 35 U.S.C. § 102(g) (1990).

111. *Id.*

112. *See* 3 CHISUM, PATENTS § 10.03 (1990); Laas v. Scott, 161 F. 122 (C.C.E.D. Wis. 1908).

113. *See* 1 WALKER, PATENTS § 45 (2d ed. 1986) *citing* Technitrol, Inc. v. United States, 440 F.2d 1362, 1369 (1971); *see also* American Science & Eng'g, Inc. v. United States, 663 F.2d 82, 84 n.7 (1981).

lowing time line:[114]



The time line represents the life of a patent from conception of the invention to expiration of the patent. Under section 102(b) of the Act, an inventor must file a patent application within one year of the date of first use.

Typically it takes two to three years to prosecute a patent application through the Patent Office. That period may be longer or shorter, depending on complexities in the particular case. If the applicant pays the required fees, he is entitled to patent rights for the statutory period of seventeen years.

Notes which are kept by the inventor or within the company provide a ready basis for proof of each of the critical facts—conception, diligence, and reduction to practice.[115] The notes may also be valuable in proving elements in a trade secret case or showing independent creation in copyright litigation. From the trial practi-

114. I wish to thank Donald Pagel, a San Jose patent attorney, for the clear sketch and explanation of the patent process time line.

115. E. I. Du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1436 (Fed. Cir. 1988); *see also* Sales Affiliates, Inc. v. Hutzler Bros., 71 F. Supp. 287, 309 (D. Md. 1947).

tioner's point of view, the ideal set of notes would be clear, complete, and entered day by day in a bound notebook. Critical stages would be signed and dated by witnesses to the work. As useful as inventor's notes are, the courts may require evidence from some other source than the inventor to corroborate the critical facts.[116]

The Court of Customs and Patent Appeals commented as follows in *Reese v. Hurst*:

> The inventors' notebooks are accorded no more weight than the inventors' testimony in this instance, since they were not witnessed or signed and were unseen by any witness until after this interference was declared.[117]

This statement underscores the evidentiary value of having the inventor sign pages of the notebook and getting witnesses to crucial stages.

Before describing some approaches to a neat, organized inventor's notebook, we wish to emphasize an important caution. Many people do not work in a way that lends itself to neat daily notes. For some, the obligation to keep such notes is a definite interference with their best work. It is not the attorney's role to pass value judgments on the inventor's work habits. Instead, the counselor should try to adapt his or her approaches and recommendations to the habits and needs of the inventors. If the note keeping procedures are not consistent with the inventor's habits and environment, the inventor's testimony and credibility may be undermined at trial.

GUIDELINE SIXTEEN

ESTABLISH EFFECTIVE NOTE KEEPING PROCEDURES THAT ARE CONSISTENT WITH THE INVENTOR'S WORK HABITS AND ENVIRONMENT.

With this caution in mind, we will examine some techniques of inventor note keeping.

Bound Volume

Keeping daily notes in bound volumes helps to prove the order of events as evidenced by the notes. If entries are made one after the other, line by line, and dated in a volume, it is easy for the trier of fact to believe that events happened as represented by the book.

---

116. Reese v. Hurst, 661 F.2d 1222 (C.C.P.A. 1981). *Compare Reese with* Sales Affiliates, Inc. v. Hutzler Bros., 71 F. Supp. 287, 309 (D. Md. 1947).

117. 661 F.2d at 1231.

It is difficult to "fake" an entry or change the order of things by removing or inserting pages.

Thus, some attorneys and other professionals have ironclad recommendations: Use high quality volumes that are bound together with thread, as books are bound. Have the pages serially numbered in advance. Have the inventor enter all steps, experiments, and ideas as he goes. Have the inventor sign and date each page. Write in permanent ink. Fill in all lines on a page or cross hatch empty lines. Have witnesses who have understood various steps note, sign, and date what they witnessed in the book itself.[118] It is important that the witnesses actually understand what it is that has been explained to them.

Alternatives to Bound Volumes

Some people keep notes other ways—on various sheets of paper or in computer storage mediums. For them, a useful compromise might be to retain their notes and record major references in summary notes in a bound volume. In any event it is important for the attorney to encourage some form of order or organization in retaining notes.

Today some workers rely nearly entirely on computer memory to store ideas, notes, and work products. Can this form of record keeping be used consistent with the potential need for proof at a later date? We think it can, but it requires additional advance planning by counsel.[119] The credibility of computer memory records can be enhanced by having a custodian make periodic separate archive disk copies, by running periodic print-outs, or by storing periodically to a read only compact disk, if available.

What Should Be Recorded?

Attorneys want the legally critical facts recorded—when conceived, when reduced to practice, when tested, and the like. The inventor, on the other hand, wants to record what is useful to her. We think the judgment on contents of the lab or invention notebook ultimately depends on the person working with it.

Robert L. Bailey suggests that the notes set forth: the problem to be solved, the plan for solving it, experiments, notations of how and who conceived solutions, notes of discussions with others, sketches at various stages, calculations, reduction to practice, tests,

118. See R. BAILEY, DISCIPLINED CREATIVITY FOR ENGINEERS (1986) and D. PRESSMAN, PATENT IT YOURSELF (1988), for a useful discussion of this subject.

119. *See e.g.*, Rosenberg v. Collins, 624 F.2d 659, 665 (5th Cir. 1980).

successes, failures, observations, and conclusions.[120]

Invention notes serve another goal other than proof. They are part of the process of inventing. The fact that the notes are part of that process makes it essential to put the inventor's concerns first. The company needs to be able to prove its ownership of an invention, but first there must be an invention to claim.

Furthermore, in many instances inventions come from unexpected sources. A person working on an unrelated project may come up with the conception of an invention or even one reduced to practice. People whose activities seem far afield from high tech inventing may turn out to be the inventors—people from marketing, accounting, even the legal department! If the company is to reap the harvest of inventions, it must not turn procedures or routines into blinders.

1.15 Reverse Engineering and Clean Rooms

High technology companies use a variety of means to keep up to date and improve their product offerings. They study patents and literature, involve their personnel in professional conferences, and examine other products on the market. A district court judge described these activities of a semiconductor developer in the early days of that industry:

> It was clearly established that Fairchild Camera regularly . . . purchased and studied all domestic and foreign patents as well as relevant trade literature and competitors' sales and promotional literature and products. The same purchase, study and analysis of competitors' newly marketed products is also a regular and customary practice by all engaged in this highly competitive industry. Because of the rapidly changing technology in this explosive industry it is apparent that such a practice is necessary for survival.[121]

The need to engage in such competitive research and surveillance is even more necessary today.

"Reverse engineering" is one aspect of the information gathering process. It is simply taking something apart to see how it works. If a product contains a useful approach that is not protected by patent or copyright, the competitor is generally free to use it. The Supreme Court has stated: "A trade secret law, however, does not offer protection against discovery by fair and honest means,

120. R. BAILEY, DISCIPLINED CREATIVITY FOR ENGINEERS 451 (1986).

121. Motorola, Inc. v. Fairchild Camera & Instrument Corp., 366 F. Supp. 1173, 1183 (D. Ariz. 1973).

such as by independent invention, accidental disclosure, or by so-called reverse engineering, that is, by starting with the known product and working backward to divine the process which aided in its development or manufacture."[122]

GUIDELINE SEVENTEEN

ADVISE ON THE PERMISSABLITIY OF REVERSE ENGINEERING AND ON ITS LIMITS SO THAT COSTLY MISTAKES CAN BE AVOIDED.

High technology industries need to be sufficiently bold in their efforts to keep up to date. The general rule permitting broad information gathering is easy enough to carry into practice, yet clients must avoid mistakes of judgment that will cause trouble. Zeal to obtain the latest information may cause a company to seek inside information from a competitor. While this activity may be legal, it is risky.[123] The client must avoid use of improper means to acquire knowledge of a trade secret.[124] Generally, the claimant of a trade secret bears the onus of identifying and guarding it.[125] However, activities which appear to be snooping can be persuasively characterized as improper. If the client is engaged in aggressive analysis of others' products, then it is essential to review information gathering frequently enough to avoid misjudgments as to where the line of propriety lies.

The introduction of copyright as a means of protecting high technology inventions[126] has created another technique of development called the "clean room." The clean room technique works exactly opposite from reverse engineering. The holder of a patent can forbid all use of the patented invention, including the use of items that were independently created. Independent creation is not a defense to patent infringement, but it is to a claim of copyright

122. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 476 (1974). With regard to federal protection of semiconductor chip mask works, the law specifically provides that it is not an infringement "to reproduce the mask work solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques embodied in the mask work." 17 U.S.C. § 906(a)(1) (1988).

123. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.9; *see also supra* sec. 1.17 regarding specific risks.

124. CAL. CIV. CODE § 3426.1(B)(i) (West 1984 & Supp. 1990). Under the Uniform Trade Secrets Act, misappropriation of a trade secret includes use of a trade secret which was "derived from or through a person who had utilized improper means to acquire it."

125. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.10.

126. Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984); Apple Computer, Inc. v. Formula Int'l, Inc., 725 F.2d 521 (9th Cir. 1984).

infringement.[127] Thus, if a software creator is given specifications for a given result and works independently to achieve that end, the resulting software should be free of claims of copyright infringement. The "clean room" concept identifies this process: inventors work in isolation from inputs other than the required specifications.

In *NEC Corp. v. Intel Corp.*,[128] Intel claimed that NEC's microcode infringed Intel's copyrighted microcode. As part of its defense, NEC offered evidence of the characteristics of a third code developed in a clean room. The clean room evidence was an important part defense of NEC's successful defense. The District Court Judge explained:

> The Clean Room microcode constitutes compelling evidence that the similarities between the NEC microcode and the Intel microcode resulted from *constraints*. The Clean Room microcode was governed by the same constraints of hardware, architecture, and specifications as applied to the NEC microcode, and copying clearly was not involved. Mr. McKevitt, who created the 8086 microcode for Intel, readily acknowledged that the microarchitecture of the 8086 microprocessor affected the manner in which he created his microcode, and that he would expect that another independently created microcode for the 8086 would have some similarities to his. . . . Accordingly, the similarities between the Clean Room microcode and the Intel microcode must be attributable largely to the above mentioned constraints.[129]

The judge concluded that common constraints regarding required performance rather than copying caused the similarity of the NEC and Intel codes.

A clean room process of development is expensive because the engineers are insulated from usual sources and their time is preempted by the project at hand.[130] Nevertheless, it can be useful to companies whose products require entry into a market that is de-

---

127. *See* 35 U.S.C. § 271 (1988); *see generally* 17 U.S.C. §§ 102, 106 (1988). Copyright protects "original works of authorship" and grants the owner of a copyright the exclusive rights to make copies and derive works. An independently created work is orignal and is neither copied nor derived.

128. 10 U.S.P.Q.2d 1177 (N.D. Cal. 1989).

129. *Id.* at 1188 (emphasis added).

130. "Requirements imposed by the American legal system are having an increasing effect on the development of high technology products . . . legal considerations are becoming more and more important to decisions formerly made solely on engineering criteria." Derwin, *Using Clean Room Design Procedure to Reduce the Legal Risk Involved in the Creation of Functionally Compatible Products*, (1989). Douglas Derwin was a member of the NEC defense team in *NEC Corp. v. Intel Corp.*.

pendent on software compatibility. A recent article by economist Joseph Farrell describes some of the problem of compatibility:

> The courts have not yet clearly determined whether, or to what extent, an owner of intellectual property may refuse to allow others to adopt features of his invention that are necessary to ensure compatibility. For instance, it is unclear whether an inventor of a popular spreadsheet program can insist that others not use identical or similar commands. Can an inventor of a widely-used graphic interface recover damages from a later inventor who uses similar icons? Does or should a later inventor have a right to adopt such features to the extent that, although initially arbitrary, they have become a necessity for market acceptance? Is there a right to make one's product compatible with another's?[131]

Compatibility is a particularly important consideration in the computer industry. One of the basic concerns is the extent to which a person who uses one make of computer can work with or "interface" with someone else who uses a different brand.

For example, an Apple Macintosh is not compatible with an IBM PC; a user can not run applications programs for one on the other. This is due to the different design of the internal programming or operating systems of the two computers.[132] The desire for compatibility lay at the heart of the leading computer copyright case, *Apple Computer, Inc. v. Franklin Computer Corp.*, in which Franklin essentially cloned the Apple operating system. A primary defense by Franklin was that it was simply not feasible to write its own compatible programs. Franklin's engineering vice-president testified that after he had studied the matter of making one compatible subsystem, he concluded that the task was not possible, because "there were just too many entry points in relationship to the number of instructions in the program."[133]

1.16 Corporate Opportunities

Those who work in high technology fields often encounter opportunities to move to a new job or to work with a start-up company. Much of the activity in the high technology industry is in fact done by companies that are spun-off from other companies. The

131. Farrell, *Standardization and Intellectual Property*, 30 JURIMETRICS J. 35, 36 (Fall 1989).

132. *See supra* sec. 1.11. Different computers can be made partially compatible with each other by writing software that allows a machine with one operating system to interact with another computer using a different operating system.

133. 714 F.2d 1240, 1245 (3d Cir. 1983).

powerful field of semiconductor development was and still is largely a product of spin-off companies.[134] In general it is legitimate for individuals to create spin-off companies. It is also generally acceptable for companies and individuals to seek each other out in the employment market. Individuals enjoy a right of personal job mobility that common law and statutes have recognized.[135] Companies enjoy broad rights to seek out and offer employment to persons who appear to be valuable to their activities.[136]

However, corporate officers and other key personnel should refrain from converting corporate opportunities to their own use.[137] This obligation is a function of a general duty of loyalty to the employer. That obligation is balanced against the employee's liberty to seek new gainful activity, including the privilege to make arrangements to compete even before terminating employment.[138]

One court has summarized the doctrine of corporate opportunity as follows: "[I]f a business opportunity is presented to a corporate executive, the officer cannot seize the opportunity for himself if: (a) the corporation is financially able to undertake it; (b) it is within the corporation's line of business; (c) the corporation is interested in the opportunity."[139]

In the high technology industries, corporate opportunities are often closely tied to inventions. The employee who desires to move out on his own may see opportunites to exploit technologies in ways or markets which his employer has not tapped. He may leave all the genuine trade secrets behind, yet still take a major "window of opportunity" with him, because timing can be so valuable. If the company is to protect against this risk, it must be as alert in com-

134. Motorola, Inc. v. Fairchild Camera & Instrument Corp., 366 F. Supp. 1173, 1177 (D. Ariz. 1973). The phenomenon was noted by the court in an early semiconductor case: "The semiconductor industry is a relatively new but rapidly growing field. Many new companies have been formed as a result of a spin-off of groups of executive and scientific employees from other established companies." *Id.*

135. Diodes, Inc. v. Franzen, 260 Cal. App. 2d 244 (1968); Science Accessories Corp. v. Summagraphics Corp., 425 A.2d 957 (Del. 1980); Maryland Metals, Inc. v. Metzner, 382 A.2d 564 (Md. 1978); CAL. BUS. & PROF. CODE § 16600 (West 19xx); *see also* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.02(2)(d).

136. *See* Motorola, Inc. v. Fairchild Camera & Instrument, Corp., 366 F. Supp. 1173, 1181-82 (D. Ariz. 1973). A company seeking to hire away another's employees needs to avoid offers to employees who are bound by contract to an existing employer. It also must pursue its own interests, rather than seek to damage the other company's interests.

137. *See* Science Accessories Corp. v. Summagraphics Corp., 425 A.2d 957 (Del. 1980); *see also* Annotation, *Fairness To Corporation where Corporate Opportunity "is Allegedly Usurped" by Officer or Director*, 17 A.L.R. 4TH 479 (1982).

138. Maryland Metals, Inc. v. Metzner, 382 A.2d 564 (Md. 1978).

139. Science Accessories Corp. v. Summagraphics Corp., 425 A.2d 957, 963 (Del. 1980), *citing* Guth v. Loft, Inc., 5 A.2d 503 (Del. 1939).

municating the bounds of its business interests to its personnel as it is in identifying its trade secrets. In short, the company needs to keep its key personnel aware of its true interests in the fields in which they work.

In this area, employee satisfaction is far better protection to the company than a legal remedy that seeks to retrieve the lost opportunity. If the employer has communicated effectively and kept the employee satisfied with the job, information about opportunities is more likely to flow to those within the company who may be able to pursue them. If this does not occur, the opportunity is likely to get bottled up.

Opportunities to enter markets or take advantage of known needs run parallel with the invention process. Such opportunities are especially important to any decision making concerning licensing of new technologies. It is fair to suppose that watching for opportunities is just a normal part of "tending the store." The litigation concerning lost business opportunities is an indication, however, that clients may need advice in this area.

GUIDELINE EIGHTEEN

COUNSEL SHOULD FIRMLY ADVISE: REVIEW MARKET INFORMATION ACTIVELY WITH KEY PERSONNEL OR INVENTION AND LICENSING OPPORTUNITIES MAY BE IRRETRIEVABLY LOST.

1.17 The Duty to Inquire

The reciprocal of the doctrine of corporate opportunities is a legal theory which obliges companies that operate in highly competitive inventive environments to inquire into the status of others' rights concerning intellectual property. The entertainment industry has created a strong body of law on this subject.[140]

A recent case is illustrative. In *Ralph Andrews Productions, Inc. v. Paramount Pictures Corp.*,[141] the plaintiff successfully protected an idea for a television game show. The plaintiff, Ralph Andrews Productions (RAP), was a television show producer. RAP had an agreement with Columbia Pictures Television that any programs it produced would first be offered to Columbia. RAP came up with the idea for a program that would be called "Anything For Money" which would feature people who would do anything for

140. *See generally* Annotations, *Literary and artisitic rights for purposes of, and their infringement by, or in connection with motion pictures, radio and television*, 23 A.L.R. 2D 328 § 24 (1952).

141. 222 Cal. App. 3d 676 (1990), 271 Cal. Rptr. 797 (1990).

money. People would be asked things such as: "For $200 would you kiss an octopus? For $2,000 would you get a tattoo that said 'mama's boy?' "[142] RAP presented the show to Columbia and Columbia rejected it. After the rejection, RAP's vice president for development, Bernstein, presented the idea for the show to a Paramount vice president, Goldhammer, apparently representing that the show was his.[143] After a short period of time, Bernstein went to work for Paramount and produced 150 shows which ran for a year on television. The court permitted the plaintiff RAP to pursue its remedies against Paramount.

The essence of RAP's cause of action was that Paramount should have inquired into RAP's rights in the particular show before hiring Bernstein to work on the show. No specific employment provision bound Bernstein concerning the show, nor was the idea itself protectable by copyright. Nevertheless, the business environment was such that Paramount had a duty to inquire. The court reasoned that ownership rights to concepts having commercial value are so important that "clarification of ownership rights is frequently required before potential projects are discussed."[144]

We suggest the following approaches concerning the duty to inquire:

1. An inventive company will normally hire from within its own industry and often from competitors. This need not be discouraged in any general way.[145]

2. Ask new employees about their assignments for former employers so that any necessary steps can be taken to avoid conflict with that employer's legal interests. Ask the new employee to sign an acknowledgement or contract not to bring matters to the new employment from a former employer that are not available to the general public.[146]

3. In cases where new inventive employees give a clear indication that they have information which is a trade secret and which can not readily be separated from the new employment, the new employer might provide a job assignment within the new company that has less direct overlap with the job assignment with the former employer. This matter is difficult to judge. The client ought not

142. *Id.* at 680 n.1, 271 Cal. Rptr. at 798 n.1.

143. On appeal, the court reversed a summary judgement. Therefore, the facts were not actually determined in the reported case.

144. Ralph Andrews Prod., Inc. v. Paramount Pictures Corp., 222 Cal. App. 3d 676, 679 (1990), 271 Cal. Rptr. 797, 800 (1990).

145. *See supra* sec. 1.16 for a discussion on corporate opportunities.

146. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.9.

overreact in such circumstances. The new employer is, after all, entitled to employ new people, and employees have recognized interests in rights to job mobility.[147] Thus, three interests need to be accommodated—those of the former employer, those of the new employer, and those of the employee. Inquiry coupled with reasonable precautions should suffice to meet the new employer's obligation in the matter.

GUIDELINE NINETEEN

WHILE JOB CHANGES WITHIN AN INDUSTRY ARE NORMAL, EMPLOYERS SHOULD ASK NEW EMPLOYEES ABOUT PAST WORK ASSIGNMENTS TO AVOID CONFLICT WITH A FORMER EMPLOYER'S INTERESTS.

1.18 Contracts as Intellectual Property

A contract is a powerful means of creating protectable intellectual property. Contractual arrangements allow protection in instances where the three basic theories—patent, copyright, and trade secret, will not. Also, contractual arrangements regarding the creation of intellectual property are tied closely to licensing the use of the property, a matter that is explored in this section and in the next one as well.

Chapter two examined the ways in which contracts allocate invention ownership rights and disclosure obligations in employment and consulting relationships.[148] We also saw how contracts can enhance trade secret protection through nondisclosure provisions.[149] In this section we will look directly at contract as a means of protecting idea products.

Basic contract law can be enlisted to protect ideas in themselves. This is something that patent and copyright specifically deny. A bargain is struck to protect or to convey the idea. The principle can be applied throughout the inventive process. It is used to protect confidences through nondisclosure agreements, to make technical and resource exchanges through development agreements, and to describe and limit the exchanges through licenses.[150]

The practitioner should apply basic principles of contract law. The basic norm is that a contract is a bargained for exchange, usu-

147. Diodes, Inc. v. Franzen, 260 Cal. App. 2d 244, 67 Cal. Rptr. 19 (1968); *see also* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.17.

148. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.5, 2.6.

149. H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.7; *see supra* sec. 1.17.

150. *See infra* sec. 1.19.

ally of promises.[151] Oral promises can be enforced, but the practitioner must observe statute of frauds requirements. A writing is desirable, and it should be remembered, that if there is a writing, the parol evidence rule may be invoked to limit the introduction of evidence of terms other than those contained in the writing.[152]

One principle that deserves special mention is the requirement of certainty. Contracts may be enforced based on expectations that are reinforced by custom, but if an arrangement is too uncertain a court may rule that no agreement exists.[153]

GUIDELINE TWENTY

CONTRACTS MAY BE USED TO PROTECT IDEAS. CUSTOM OR A PATTERN OF DEALING MAY EXPLAIN TERMS, BUT COUNSEL MUST INSIST ON ADEQUATE DEFINITION OF ESSENTIAL TERMS. IN ADDITION, COUNSEL SHOULD BE ALERT TO THE EFFECT OF THE PAROL EVIDENCE RULE.

The need to protect ideas in themselves runs throughout the development process. Contracts should be considered a means of protection at any stage where valuable information or ideas need protection. Ideas are vulnerable at each of the following stages:

1. *Conception of an approach.* An inventor figures out a new way to do something. Perhaps she gets the idea for a radical new approach to file organization in software. The idea will remain vulnerable until linked to a process and patented, or expressed and fixed in a medium, creating a copyright. Even then, those bodies of law will not protect the idea itself.

2. *Translation to design.* The idea must be perfected. It must be tested. It is virtually impossible to produce anything entirely by oneself. One needs the cooperation of others, coupled with confidentiality. Within companies this is accomplished by employment

151. A contract is a promise or a set of promises for the breach of which the law gives a remedy, or the performance of which the law in some way recognizes as a duty. RESTATEMENT (SECOND) OF CONTRACTS § 1 (1979).

152. *Id.* at § 209 (1979). In Wang Laboratories, Inc. v. Doktor Pet Centers, Inc., 422 N.E.2d 805 (Mass. App. 1981), the court permitted parol evidence in the form of testimony concerning negotiations related to systems responsibililty for a computer system, brushing aside a warranty limitation provision "in fine print." Compare with International Business Mach., Corp. v. Catamore Enter., 548 F.2d 1065 (1st Cir. 1976), refusing to vary the terms of a written contractual limitation of liability entered into "between sophisticated corporate entities."

153. *See* RESTATEMENT (SECOND) OF CONTRACTS § 33 comment a (1979), which notes that indefinite terms may be given meaning by custom or course of dealing, but "if the essential terms are so uncertain that there is no basis for deciding whether the agreement has been kept or broken, there is no contract."

contracts, known rules, and above all, real loyalty. Contacts outside a company rely on confidentiality agreements.

3. *Components.* Often the new invention needs to be combined with other components. This is done in-house or with outside help. Either way, the invention becomes vulnerable to exposure, because many more people will come in contact with it. Trade secret identification and protection becomes more difficult.

4. *Suppliers and subcontractors.* Ordering supplies or work to specification increases the risk of release of the idea.

5. *Marketing.* Marketing relies on exposure. In order to market effectively, a company simply must begin the process of disclosure. Very sensitive judgments may be involved when making the disclosures.

6. *Idea per se.* Finally, it may turn out that the only way to preserve what is valuable is to keep it secret. Additionally, secrecy should be bolstered by careful management of the secret's exposure and confidentiality agreements.

The matters involved in contract protection of ideas are traditional contracting skills. Plan for the desired result. Obtain agreement in principle. Draft the contract to reflect the plan. Execute the contract. The latter, execution, is the critical aspect regarding confidences. Confidentiality rarely survives in an atmosphere of mistrust. The client needs to be guided to create and feed the conditions of real cooperation.

The California Supreme Court captured the essence of protecting ideas by contract colorfully and bluntly: "[T]he idea man who blurts out his idea without having first made his bargain has no one but himself to blame for the loss of his bargaining power."[154]

GUIDELINE TWENTY-ONE

COUNSEL CLIENTS TO PROTECT THEIR IDEAS BY USING APPROPRIATE CONTRACTS AND CONFIDENTIALITY AGREEMENTS. THESE ARRANGEMENTS SHOULD BE CREATED TACTFULLY.

Here are some suggestions for carrying out that guideline:

Custom

Industry customs will show what is usual in writing contracts to protect ideas. Sometimes only a very informal notation is needed because the industry understands and expects certain categories of confidences to be observed and protected. The entertainment indus-

154. Desny v. Wilder, 46 Cal. 2d 715, 739, 299 P.2d 257 (1956).

try has long relied on the need to protect ideas underlying an entertainment project. Some of the ideas are very simple. "Candid Camera," created by Alan Funt, has amused different generations of people. The idea is simple—catch people unawares on film and everybody enjoys the experience. But so much of what is entertaining simply cannot be captured and protected by traditional intellectual property—in this case, copyright. Thus, the custom of the industry accepts and emphasizes the need for contract. Custom may also give meaning to essential aspects of the contract.[155]

Sometimes counsel will encounter situations where either the industry customs or the relations of the parties rely on a large degree of informality. In these circumstances the attorney should advise on the importance of definite terms. That advice, however, can be tailored to the circumstances by encouraging the parties to refer to important customs in the contract itself.[156]

Research

Research is a very valuable aspect of high tech development. In itself it is not protectable by copyright[157] and is certainly not subject to patent. The results of research must be protected, if at all, by trade secret and contract. Vis a vis the employees and consultants, this is done by agreements governing the relation with the company.[158] Information itself has become a valuable commodity, as witnessed by the many data bases and subscription services of today. The essence of those services, the information, must be protected by subscriber agreement. The companies that distribute these resources, for example, Mead Data Central, Inc. and West Publishing Company, for Lexis and Westlaw respectively, create clear, specialized licensing agreements. These agreements perform dual functions: They permit and define the use, and they create the property claim.[159]

We suggest the following steps in handling research protection:

---

155. *See* Warner Bros. Pictures, Inc. v. Columbia Broadcasting Sys., 216 F.2d 945 (9th Cir. 1954), the "Maltese Falcon" case. This case is a fine example of using contract and custom to articulate the scope of protection.

156. *See* Macneil, *Values in Contract: Internal and External*, 78 NW. U.L. REV. 340, 345 (1983). Macneil urges that customs or "relational patterns" of behavior are dominant aspects of most contracts. "Thus, it is readily apparent that even a transaction deliberately chosen for its discreteness is deeply embedded in a wide range of interconnected relations." *Id.*

157. 17 U.S.C. §§ 101, 102(b), 103; *see also* West Publishing Co. v. Mead Data Cent., Inc., 799 F.2d 1219 (8th Cir. 1986); *Miller v. Universal* Studios, 650 F.2d 1365 (5th Cir. 1981) (copyright protection denied to research under the 1909 Act).

158. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, secs. 2.3, 2.4, 2.6, 2.7.

159. West Publishing Co. v. Mead Data Cent., Inc., 799 F.2d 1219 (8th Cir. 1986).

1. Identify the *use* of the research. If it is research to be used internally for production or for invention, then the internal free flow of that research should be limited to those for whom the information is clearly necessary. This approach is also consistent with effective trade secret protection, because the true secrets are more likely to be identified, respected, and ultimately sustained in court.[160] If the end product is research, as with a data bank, or if the research is critical to the use of a product or device, then licensing considerations take over. For limited audience and specialized use, it is important to review license forms in detail and draft specifically to cover the particular situation.

2. Identify the *customs* of handling research. You need to ask: "How do people handle research and exchange of information in this industry?" This needs to be followed with inquiry into the specific nature of a research project. A company may have an internal group that works closely within a professional circle including outsiders. These people fruitfully exchange information; they may not be aware of or concerned with the restriction of information going to the outside. The problem for counsel is: How to maintain beneficial professional collegiality, yet preserve that which must be kept in house? The decision is case by case, but these criteria help as a guide:

- Let the inventors identify the essence of the inventive work.
- Listen to the inventor's explanations of the mores and expectations of the broader professional community.
- Persuade the inventors of the importance of narrowly tailored secrecy. Obtain agreement or consensus, if possible.
- Present findings to management and obtain and implement a reasonable decision.

Another very different approach is to take much tighter control of research related conversations and communications at the outset. Lay down rules or a code that limits all discussion of projects. The approach is practiced, apparently successfully, by various companies. We prefer the first approach rather than the tighter control method, because it appears more realistic. It relies on educating the inventors and letting them carry out the necessary demands of confidentiality as they work. It also fosters the collegial

160. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.10.

contact that brings about invention and keeps professional people satisfied with their work.

Many professions have strong traditions of shared results through conferences and papers. This is notably, for example, in the semiconductor industry, the annual International Solid-State Circuits Conference (ISSCC). In the thirty seven years since its inception, the ISSCC has been a kind of "Who's Who" of inventors in the solid state (semiconductor circuit) profession. Inventors need to be able to participate in such exchanges to keep up to date, and employers benefit from cross fertilization and by having their people appear in the forefront. One technique that is effective and widely used to accomodate secrecy demands with professional participation, is to require some reasonable review period and discussion before inventors make presentations or publish results.

Certain situations such as joint ventures and development agreements create broad exposure of projects to people outside of the company. These require formal confidentiality agreements as is the case in other forms of exchanges such as trade secret or technology licenses. A research or development confidentiality agreement will be predictably harder to articulate than one related to a standard licensing arrangement, because the technology involved has not yet been created. Techniques for articulating effective agreements include: (1) Limiting the number and perhaps specific identity of the outsiders with access, (2) identifying the areas of high priority in the agreement, and (3) including a provision that calls for periodic review and declarations of areas of sensitivity.

Lawyers and their clients often experience pressure or friction in the following two areas:

a. The need to "do it right" vs. "get it done."

b. Client agreements vs. "the lawyers will mess it up."

First, let us examine "doing it right." When presented with a client's need for a contract, most attorneys recognize immediately that the contract must be written effectively. That means checking things, planning, drafting, and perhaps some additional legal research. However, sometimes, even often, the extra time and effort involved in doing these things is not appropriate: The client needs something now. The client wants something less formal. The client wants to conserve legal expenses.

An attorney might respond in a number of ways. For example, the attorney could pull out an old form and use it or insist that the contract be drafted more fastidiously than the client wants. The attorney might push the matter back to the client to proceed "on its

own hook," because the matter can not be done less formally and still be done right. Finally, the attorney could work within the client's expressed constraints. We urge that the last of these is the best choice—work within the client's expressed needs. Be sure to inform the client of legal consequences and indicate the relevant options. When you determine that certain efforts or details are necessary, tell your client and become more insistent on attention to these matters.

However, insistence on a thorough legal plan or analysis in every situation imposes a kind of "all or nothing principle" on the client. That approach can unnecessarily increase client cost, undermine confidence in attorney services, and even force the client to say, "forget it, don't call the attorneys on this one." The last consequence, avoiding attorneys altogether, can do much harm to the client. We believe that it is best for attorneys to be flexible and adapt to client needs and resources. Some clients can afford everything and seem to insist on "full service" every time. We also suspect (and have some evidence) that many attorneys working with "full service clients" realize that those clients are also best served by not pursuing full service each and every time.

Do not overlook essential matters. Insist on sufficient definiteness.[161] Watch out especially for statute of fraud requirements and the potential impact of the parole evidence rule in your jurisdiction. Yet be flexible.

"The lawyers will *mess it up*." The second area of friction which we mentioned represents an area where the public, and business persons in particular, find fault with attorneys. Assume two parties have worked out what they find to be a perfectly satisfactory agreement between them. Each then gives a sketch of the agreement to his respective attorney. Each wants to have the matter "put in legal language" and to have loopholes closed. Subsequently, one party or the other receives the proposal back from its attorney and presents it to the other side. Suddenly issues start appearing. The other attorney objects to this or that provision. Some of this is to be expected and is fine, so long as the parties' original intentions are simply being articulated. However, sometimes one attorney or the other is trying to help the client "get more" than fairly reflects the initial agreement. When this happens, the lawyers really are getting in the way. Avoid this by communicating with your client. For example, you can point out things in this fashion: "You probably have an advantage if you were to include this type of provision . . . but it does seem from what you have told me, that you and the

161. *See supra GUIDELINE 20.*

other party do not wish to structure your relationship on that basis."

1.19 Development Agreements

A development agreement is a contract under which one party agrees to develop a product for another in exchange for receiving certain benefits such as cash, stock grants, or something else, such as the right to market certain finished products.[162] The economic and market power of companies entering into such agreements will vary. Sometimes two strong companies will enter into such agreements in order to take advantage of reciprocal strengths or to free resources so that one company or both can focus attention in chosen areas of development. Often a development agreement is simply a matter of employing another company to do a job. For example, an automobile manufacturer may hire a software company to develop a database management system for its use.

Development agreements are often of particular importance to fledgling or start-up companies. This is because the agreement itself is often the source of the initial capital necessary to set the company in motion. When this is the case, counsel may be asked to participate in decisions regarding formation of the initial capital for the company. The basic sources for this capital are the following:

1. The founders' own funds.
2. Funds from private individuals or companies that have particular confidence in the founders.
3. Funds supplied by third party "venture capitalists," who are willing to invest in speculative new ventures.
4. Funds from existing companies interested in the product line often by the way of development agreement.

The decisions made with regard to financing are non-legal business decisions, but attorney input as to consequences may be asked for and can be critical to the decision making process. In each of the four alternatives, the initial supply of money provides the necessary support for the business. The reciprocal for this support is the interest in profit or the payment made to those who have provided the capital.

When you examine the fourth choice and its use of a development agreement, you see that the pay off to the investing company is tied to the delivery of products or inventions which are important

162. H. Anawalt, Teaching Materials Compiled at Santa Clara University, (1990). The material in this section is derived from teaching materials produced by Howard Anawalt.

to that investing company. The development agreement may allocate intellectual property and ownership rights that will be critical to the existence or progress of the startup company. From the point of view of the investing company, the agreement may commit resources and market timing to the performance of a new company in an important area. In sum, each of the partners may rely on the other for critical resources.

The reciprocal reliance involved in development agreements should not obscure the reality that the start-up is the actual dependant party in this arrangement. If the agreement fails to meet the needs or expectations of the parties, the consequence can spell disaster for the start-up because of its economic vulnerability. For counsel, this may suggest a very delicate job of advice and negotiation at the time the agreement is set up. The start-up needs to protect itself against giving up too much, yet it probably needs to secure the agreement in order to start business.

Extensive homework is necessary before a basic sketch of the agreement is set forth between the parties. The homework includes all phases, including market position of the potential partners, potential competition, and alternative sources of supply and cash. Of the many variables, we will focus on three that are most closely related to intellectual property development: *description* of matters to be developed, *allocation* of intellectual property rights, and *access* to production facilities and markets.

Description of What Is to Be Developed

The first stage of any contract preparation is planning. Each party needs to know what it expects to gain and what it expects to provide as part of a relationship. This planning stage is the most important. Indeed, drafting is important too, but counsel should be aware of the importance of the big picture before stepping into the details. The first step for the developer[163] is to identify what it can produce, what it is willing to produce, and its current status regarding the proposed product. The reciprocal step for the recipient is to identify what it needs and to delineate its timetable and quality requirements.

Once the parties exchange their general or basic expectations, it is essential for them to spell out in precise terms the required development performance. Let us pull the process out of the abstract and put forth an example. Assume a software development

163. We will refer to the "developer" as the party developing the technology, and the "recipient" as the party that will receive the development and provide the capital in return.

agreement is to be hammered out between XYZ Inc., a very small software company, and ABC Corp., a large computer manufacturer. A recital at the beginning of the ABC/XYZ development agreement may state:

> XYZ has expertise in the design and implementation of computer software known as XYZ-LOGO. ABC has expertise in the design and manufacture of computer hardware, specifically a system known as the ABC Personal Computer (hereinafter referred to as the "ABC"). XYZ is ready, willing, and able to develop a customized version of the XYZ-LOGO system for the ABC.

It is now critical for both parties to spell out exactly what the XYZ/ABC customized version will be. XYZ must enter into the agreement only after obtaining a full understanding of the constraints and demands of the ABC hardware. The contours and performance expectations for the customization need to be known and adequately designated in the contract.[164] One area of particular importance in software development is the documentation. "Documentation" is the collection of information that accompanies the development of a piece of software. It really comprises two things. One is the process of recording how a program is developed. This aspect of documentation enables one programmer to continue where another leaves off and helps where there is a desire to amend or convert the program to another use.[165] The second aspect of documentation is the presentation of the commands and requirements of the program in a fashion that allows the user to use it. The better the documentation is, in this second sense, the more "user friendly" it will be. In either sense, documentation can be an enormous task for the developer. The developer must set out realistic limitations on its documentation requirements in the contract, or it may be stuck with obligations that are time consuming to the point of crippling the software company.

Allocation of Intellectual Property Rights

Allocation of intellectual property rights goes to the very heart of the development agreement. First, counsel should assure that the client has identified its most important intellectual property goals.

---

164. One device often employed for expressing contours and performance is an Exhibit which is explicitly referred to in the main body of the contract. For example, in the ABC/XYZ agreement, the body of the contract may provide:

> *Customization.* XYZ agrees to design and develop the adaption and the documentation meeting the specifications set forth in Exhibit A, attached hereto, and fully incorporated by reference herein, ...

165. A. CHANDOR, *supra* note 63, at 153-54.

These may very well conflict with those of the other party. For example, in a custom software development agreement, both the developer and user may wish to own the rights to the developed system itself. Parties can lock horns very tightly in such a situation, and one or both sides must give. The prospective user often has the upper hand, as it may simply be able to turn to another developer. The options for resolution include copyright ownership by one or the other and variations of a license to the other party.

Clarity of ownership and development obligations may affect a range of potential rights. In *Jostens, Inc. v. National Computer Systems, Inc.*,[166] Jostens sued its former employee, Titus, and a new company which he joined as an officer over ownership of a valuable CAD/CAM system for designing and engraving rings.[167] Titus had designed the system for Jostens. In so doing, he contracted for critical software for the system from another developer, Adage, Inc. The agreement for the software was devoid of particulars concerning which parts would be owned by Jostens. The lack of clarity at that stage undermined Jostens' ability to claim against Adage, and it helped to create doubt that Jostens' owned anything in the entire system. Jostens lost its claim against its new rival, National Computer Systems.[168]

GUIDELINE TWENTY-TWO

THE DEVELOPMENT AGREEMENT SHOULD COVER CONTEMPLATED ASPECTS OF OWNERSHIP, LICENSES AND THEIR SCOPE, RIGHTS TO DERIVATIVE WORKS AND PRODUCTS, RESEARCH, TRADE SECRETS, AND CONFIDENTIAL RELATIONSHIPS.

The articulation of the specific terms and conditions of ownership is determined by the exact circumstances and intentions of the parties. For instance, in the Jostens situation a software development agreement could have been negotiated to serve Jostens interests.[169] The Court stated:

A central issue at trial was what and how much of the Adage

166. 318 N.W.2d 691 (Minn. 1982).

167. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.10 discussing other aspects of the Jostens case.

168. *See* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.3 discussing "works made for hire" under copyright.

169. The development agreement should have been bolstered by an effective contract and sufficient intra-company care about trade secrets. Jostens, Inc. v. National Computer Sys., 318 N.W.2d 691, 696 (Minn. 1982). However, a development agreement in itself, could have done much to identify trade secret material. *See also* H. ANAWALT & E. ENAYATI, *supra* note 1, sec. 2.7.

> material was used to write Jostens' original package was also used to write NCS' programs. Specifically, this involved not the operation systems software, a standard component sold to all Adage customers, but the application software, used to adapt a system to a particular user's needs. Adage's programmers testified many of the routines used in writing NCS' package were "utility routines," simply taken off their library shelf, and that in assembling new application packages, programmers usually wrote only about 10% new material, while in this case about half the final NCS package was original.[170]

Access to Production Facilities and Markets

A development agreement may seek to provide needed production capacity or market access for one party. This is particularly valuable to a start-up company for it limits need for immediate capital expenditure on facilities and payroll, and creates market exposure and contact. It is critical that a start-up spell out these obligations, because it is in a more dependent position. The established company benefits too, from clarity in these obligations.

A good approach is to set forth the obligations both in general principle and in adequate detail. The general principles declare what is important and lend great force during any legal proceeding on the contract. The specifics leave little room for equivocal interpretation during the actual performance of obligations. Production obligations need to include provisions on quantity, time, priority, quality, and product specification. Provisions requiring the manufacturing party to use "best efforts" are appropriate and necessary in some instances, especially where new product development is involved, but these should specify anticipated contingencies and link them to clearly stated priorities.

The party seeking to use the other's marketing or sales resources needs to provide clear designation of contracted service and support. The agreement should usually include such matters as: geographic areas of support, designation of the officer with overall responsibility to assure support, and anticipated levels of performance. It is useful to include sales and marketing incentives, such as commissions flowing to the party providing the support, as these can help overcome inertia, especially where the supporting party itself markets competing products.

When parties enter into an arrangement that is uniquely dependent on continued *performance* such as a development contract,

170. 318 N.W.2d at 696.

it is essential to evaluate the true cooperativeness of all parties to the arrangement. In other words, counsel and client want the arrangement to work, rather than be litigated. This expectation of true performance is what lies at the heart of the obligation of good faith and fair dealing in contracts.[171]

It is worthwhile to note the attitude attached to the matter of good faith in Japanese culture. In Japan perhaps the greatest attention is placed on the relations created between the parties *before* a contract is entered into. In a way, the contract is the "icing on the cake," the realities of the relationship having been already established. An arrangement (reflected or formalized in the contract) progresses as the mutual needs of the parties are worked upon and fulfilled. Thus, traditional Japanese contracts are very short and devoid of detail. This is often mistaken by westerners as a lack of commitment to contract, yet, it generally represents just the opposite.[172] The point here is that the kind of advance assessment of capacity to work together practiced in Japan is very useful in the United States. Also, the flexibility within a contractual arrangement is desirable—adjust performance mutually to meet changing goals and needs.

GUIDELINE TWENTY-THREE

A PARTY PLANNING A DEVELOPMENT AGREEMENT NEEDS TO ASSESS THE WILL TO COOPERATE SO THAT THE VENTURE WILL BE LIKELY TO SUCCEED, RATHER THAN BE LITIGATED.

1.20 Concluding Remarks

The attorney who advises individuals and companies who wish to protect their inventions needs to pay close attention to a range of factors. The task is primarily a legal one, and the attorney must be fully acquainted with intellectual property law. In addition, the attorney should recognize that business people and inventors have varying attitudes toward receiving legal advice. Many inventors and companies are pleased to receive legal advice, but some are resistant to involving lawyers in the process. The relation of law to inventive processes is likely to mystify some clients, and the attorney needs to reduce that mystery and make matters clear.

171. These obligations inhere in contracts and corporate structures. *See, e.g.*, U.C.C. §§ 1-203; Foley v. Interactive Data Corp., 47 Cal. 3d 654, 683, 254 Cal. Rptr. 211, 765 P.2d 373 (1988); Science Accessories Corp. v. Summagraphics Corp., 425 A.2d 957, 215 U.S.P.Q. 1051 (Del. 1980).

172. These comments are not intended to idealize Japanese behavior. Undoubtedly, the Japanese have individuals and groups which both exceed and fall short of norm.

Intellectual property advice needs to be shaped to the specific inventive environment. This means that the attorney should take into account the following factors which were set forth in the initial section of this chapter:[173]

- Type of Company
- Kind of workforce
- Nature of inventive work
- Relation of the invention to the company's market
- The value of the invention in itself
- The development process
- Contracts affecting invention rights
- Other parties' legal claims
- Available legal tools
- Practical issues, such as timing and licensing.

These factors show that the attorney must combine her understanding of the technology, the industry, the industry's market, and the constraints of the law to give the client effective choices. Based on the client's choices, the attorney advises concerning an effective plan for achieving appropriate intellectual property protection. Attorneys need to pay attention to client preferences, so that effective advice can be given that is consistent with the client's needs and resource allocations. Often inventors must be asked to allocate time and effort to protecting intellectual property at times when they are already very busy. Attorneys can create approaches that minimize the intrusion that intellectual property protection may require.

Invention and the law protecting inventions now influence each other markedly.[174] The attorney's role remains the traditional one of providing advice and choices, but that role is carried out in a fast changing and highly technological world.

173. *See supra* sec. 1.1 for a list of the sections covering each factor.

174. *See supra* secs. 1.1, 1.15, 1.19.