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By CLAUDIA H. DEUTSCH

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Still, the obstacles proved insurmountable. "In those days, when you went to Moscow as guests of a specific group, that was the group you dealt with," said Mr. Carbonell, who was with Standard Brands at the time. "Well, we needed to look at supplies of energy, of machinery, of other things that were not in the jurisdiction of the agricultural branch. It was impossible even to make contacts. The project never got to first base."

Mr. Carbonell, now vice chairman of RJR Nabisco, is trying again. This time, things are likely to go a lot more smoothly. The reason: RJR and six other companies — Eastman Kodak, Johnson & Johnson, Chevron, Ford Motor, Archer Daniels Midland and the Mercator Corporation — formed the American Trade Consortium in April to try to accomplish as a group what had seemed impossible to do alone. The Russians, meanwhile, have formed their own consortium, consisting of representatives from several ministries, to deal with the American consortium.

Throughout this spring and summer, high-level executives at the American companies have been shuttling to and from Moscow, trying to negotiate joint ventures for such diverse products as cars, oil and breakfast cereals. Simultaneously, officials from both consortiums have been arguing over such sweeping concerns as tax and accounting rules, multiple re-entry visas for Americans working in the Soviet Union and repatriation of hard currency. The hope is that by December not only will each company have its own joint ventures pretty well mid out but that the two consortiums will have hammered out a general trade agreement that will ease the path for all the ventures.

"The idea of the consortium is that people could get a critical mass together," said James H. Giffen, the mastermind behind the consortium and the chairman of Mercator, the merchant bank that is advising the companies. "There is no need to reinvent the wheel in every negotiation."

Maybe not — but in Russia, greasing wheels is more important than inventing them. And Mr. Giffen, a well-known authority on American-Soviet trade for 25 years, has a reputation as a wheel-greaser par excellence. He is said to know everyone there is to know in the Soviet Union and to use those contacts to cut through red tape.

Even the Chevron Corporation, which at first balked at what are generally said to be very stiff fees charged by Mercator, was lured in by that reputation. "He is on a first-name basis with every minister," said John H. Silcox, president of Chevron Overseas Petroleum Inc., the Chevron unit involved with the consortium. "He could clearly help us work through the bureaucracy."

Such help is needed. In 1986, as part of Mikhail S. Gorbachev's restructuring of the Soviet economy, the Soviet Union passed a law allowing foreign companies to own 49 percent of joint ventures they might set up with Soviet enterprises. But some aspects of the law are maddeningly vague. For example, it allows "access" to the venture's financial data but does not define what access means. Mr. Giffen has negotiated the right to take copies of financial documents out of the Soviet Union.

He has negotiated where arbitration of disputes would take place (Sweden). And he is now trying to insure that Americans working for the Soviet joint ventures are allowed to bring in televisions, video cassette recorders and other household items.

The process, even with Mr. Giffen clearing the way, remains painfully slow. "The Soviets say that everything will be wrapped up in three or four months," said Robert R. Reilly, executive director of corporate strategy for the Ford Motor Company. "I'm thinking in terms of multiples of months. There will be false starts, ups and downs. This thing will be evolving for the next 10 years."

So why bother? "The waiting list for Soviet-made cars is four years long," Mr. Reilly said. "It is perhaps the world's biggest untapped market."

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Even picking a product to make is a herculean task. For companies like Chevron, Archer Daniels or Ford, the categories are clear: oil, processed agricultural products and cars. Johnson & Johnson's choices will be health-related.

But for widely diverse companies, agreeing on a product can take months. The Eastman Kodak Company, for example, went to the negotiating table long before the consortium was announced. It suggested nine projects; Soviet officials suggested another four. Then the weeding out began. The Russians wanted to make photographic film; Kodak decided it did not need more film capacity. Kodak suggested a film-finishing operation; the Russians said no. "They saw it as the tail end of the process, and they want to encourage self-sufficiency," said David Harari, manager of countertrade activities at Kodak.

The negotiators finally settled on two projects: floppy disks for computers, and Ektachem, a blood analyzer. Both products, Mr. Harari said, fit in with Kodak's expansion strategy and with Russia's push for self-sufficiency. Personal computers are proliferating in the Soviet Union, he said, and health care is a priority for Mr. Gorbachev.

To Mr. Harari, the two products are door-openers, not an end in themselves. "We hope to gradually evolve distribution ventures for a full range of Kodak products in the Soviet Union," he said.

If that range includes a lot of consumer products, Mr. Harari may be buying trouble. For consumer goods companies, selecting products for the Soviet Union can be like shooting at a target through an opaque screen. Consumer research is unknown there. That means that companies must choose products with only a hazy idea of whether Soviet citizens would prefer them sweeter or saltier, in pre-packaged portions or family packs, or any other variation on the theme.

RJR, which hopes to make and sell baked goods, cereals and cigarettes, faces a huge product-winnowing task. It had little trouble deciding on cigarettes, since American cigarettes generally sell well around the world. Wheat-based food items were also a natural choice, since wheat is plentiful in the Soviet Union.

But picking which wheat-based products remains hit or miss. There has been seat-of-the-pants research of a sort — Mr. Carbonell and his executives brought crackers and cookies to try out on Soviet officials during negotiations, and discovered they liked Ritz and a few others. But in practical terms, there is just no consumer preference data available. So far, RJR has decided on Ritz and Premium crackers, which Mr. Carbonell says have been successful in every market RJR sells to. And it is combing its worldwide sales data for other cracker and cookie candidates.

CEREALS represent a total shot in the dark. There is no way to know whether Soviet citizens will take to the concept of cereal for breakfast in the first place (a typical Moscow breakfast is bread, eggs and sausage). And if they do, will they want hot cereals or cold cereals?

RJR plans to hedge its bets, by making cereals that run the gamut from shredded wheat to cornflakes to cream of wheat. Eventually, the venture will do market research and refine the product mix accordingly. It will take time before research yields realistic figures, though. Soviet consumers have grown accustomed to buying whatever is available, and chances are they will snap up any Nabisco product — at first. "If someone were on a deserted island, and you dropped a case of Oreos, you don't have to do market research to know it will be consumed," Mr. Carbonell said. "Well, the Soviet population is so hungry for consumer products that it will be very difficult to read a new product immediately."

For now, RJR is expecting to design and engineer two food plants, and to modernize an existing cigarette factory. It expects to have the plants running within 12 to 18 months after the general trade agreement is completed — and to get a 20 percent return on its investment soon after that.

That may be overly optimistic, for there still are numerous hurdles to overcome. Take access to supplies and workers. For Soviet enterprises, supplies are allocated according to a state plan. The joint ventures, by law, are exempt from that plan — which means they do not have guaranteed sources of supplies.

"The Soviets are planning a wholesale market at which the joint ventures can buy supplies, but they don't yet know how to buy directly," said Russell H. Carpenter Jr., a Washington lawyer with extensive Soviet experience.

SELLING may be a problem, too. The idea that one company should be responsible for manufacturing, pricing, selling and servicing a product is alien in the Soviet Union. Cars, for example, are produced there by one ministry, yet priced and sold by another. "It's not like the West, where a manufacturer can enforce standards of service and sales," said Mr. Reilly of Ford.

Currency issues remain a sticking point, too. In a sense, Soviet officials are pursuing conflicting goals. They want to generate hard currency, which would dictate that the ventures concentrate on goods for export. Yet they also want to increase the amount of consumer goods at home.

So far, the Russians are insisting that before members of the American consortium can repatriate their share of joint venture profits, the total amount of money all the joint ventures spend to import products, materials or anything else must be offset by hard currency they bring in from exports. But of all the proposed ventures, only Chevron's, for oil exploration and production, is clearly export-oriented. It is highly unlikely, at least at first, that the Chevron venture will generate enough cash to cover the costs of the others.

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Kodak is more willing to try the option. But willingness is not tantamount to execution. Mr. Harari says that Kodak has tried — unsuccessfully — over the last few years to establish countertrade in Russia. "If you found something to export out of Russia, it was always in a different ministry than the one you were selling to, and they had no internal need of bridging between them," he said.

Now the Russians, through their own consortium, are trying to create that bridge. "The Soviets have always been interested in American goods," said Mr. Carpenter, the lawyer. "Now, they are interested in investment by the very capitalists their ideology has railed against."

That interest may just motivate them to keep the wheels of business well-oiled. And the consortium's clout may also keep undue interference from Washington at a minimum.

Many American executives still smart when reminded of how swiftly President Carter, in response to the Soviet invasion of Afghanistan, imposed trade sanctions that effectively cut off American business with Russia. Consortium executives hope that their combined clout will make any current Administration less willing to impose sanctions should political talks take a sour turn.

"The idea of 'the more the merrier' defrays the political risk somewhat," said Mr. Silcox of Chevron. "I feel more secure in the consortium." ■

GIVE TO THE FRESH AIR FUND



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CLINICAL VISION SCIENCES

Editors: **R F HESS**, *Physiological Laboratory, Cambridge CB2 3EG, UK* (Distributing Editor for Europe, Africa, Far East and Australasia) and **I BODIS-WOLLNER**, *Department of Neurology, Mount Sinai School of Medicine, 1200 Fifth Avenue, New York, NY 10029, USA* (Distributing Editor for the North and South American Continents)
Associate Editor: **E ZRENNER**, *Laboratories of the Max-Planck Institute for Physiological and Clinical Research, University Eye Hospital, Mathilden Str 8, 8000 Munich 2, FRG*

The primary aim of *Clinical Vision Sciences* is to promote communication among workers in basic and clinical vision research. The journal will encourage the publication of detailed studies that use clinical material to address important issues in basic science. It will also encourage the use of basic scientific methods to address questions of clinical relevance. The word clinical is used in a very broad sense, such that studies on animals and normal human observers, if of general relevance to clinical issues, will also be welcomed. A second aim of this journal is to bring together in one place the important studies in the many diverse areas of basic vision research that impinge upon the clinical domain. These areas include psychophysics, electrophysiology, visual development (animal and human), neuropharmacology, animal models (behaviour, electrophysiology and pathology), eye-movements, geometric and physiological optics.

This is a journal with wide interests, a clinical bias and an overriding emphasis on basic science.

A Selection of Papers
Orientation-dependent loss of contrast sensitivity for pattern and flicker in multiple sclerosis, **D REGAN** (Canada) & **C MAXNER** (Canada).
Silent dopaminergic synapse at feline retinal ganglion cells, **H IKEDA** (UK) *et al.*
Fixation, pursuit and optokinetic nystagmus in a complete achromat, **L T SHARPE** (FRG) *et al.*
Abnormalities in luminance threshold, chromatic and luminance flicker fusion, and other temporal measures in multiple sclerosis, **D H FOSTER** (UK) *et al.*
Dark-adaptation in a rod monochromat: effect of stimulus size, exposure time and retinal eccentricity, **B STABELL** (Norway) *et al.*
Characteristics of the rod-cone transition in electroretinogram and optic nerve response, **T SCHNEIDER** (FRG) *et al.*

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Currency issues remain a sticking point, too. In a sense, Soviet officials are pursuing conflicting goals. They want to generate hard currency, which would dictate that the ventures concentrate on goods for export. Yet they also want to increase the amount of consumer goods at home.

So far, the Russians are insisting that before members of the American consortium can repatriate their share of joint venture profits, the total amount of money all the joint ventures spend to import products, materials or anything else must be offset by hard currency they bring in from exports. But of all the proposed ventures, only Chevron's, for oil exploration and production, is clearly export-oriented. It is highly unlikely, at least at first, that the Chevron venture will generate enough cash to cover the costs of the others.

And not all Americans relish the idea of exporting from the Soviet Union. "To send a product into Western Europe to compete against products we build there would defeat our goals," said Mr. Reilly, adding that Ford would not enter any deal in which exports are a prerequisite.

Few companies are going the countertrade route — accepting Russian products like vodka as payment, then reselling them in the West. Although that has been a hugely profitable venture for Pepsi-Cola International for more than 15 years, not all companies want to bother with taking products into markets they do not know. RJR, for example, is not even contemplating countertrade.

Kodak is more willing to try the option. But willingness is not tantamount to execution. Mr. Harari says that Kodak has tried — unsuccessfully — over the last few years to establish countertrade in Russia. "If you found something to export out of Russia, it was always in a different ministry than the one you were selling to, and they had no internal need of bridging between them," he said.

Now the Russians, through their own consortium, are trying to create that bridge. "The Soviets have always been interested in American goods," said Mr. Carpenter, the lawyer. "Now, they are



Soviet officials and U.S. businessmen signing protocol in April to start talks on a trade agreement to help joint ventures.



Mikhail Gorbachev with the consortium's James H. Giffen.

On the Drawing Board

The member companies of the American Trade Consortium and some of the joint ventures in the Soviet Union they are negotiating. One of the companies, the Mercator Corporation, is acting as merchant banker to the group and its chairman, James H. Giffen, is the main negotiator.

Archer Daniels Midland — Oilseed processing, edible oil refining and the production of starch and sweeteners.

Chevron — Oil exploration and development.

Eastman Kodak — Production and sale of blood analysis equipment and floppy disks for personal computers.

Ford — Sale of Ford cars or car kits in the Soviet Union; helping the Soviet auto industry build better cars.

Johnson & Johnson — Production and sale of health-related products.

RJR Nabisco — Production and sale of crackers, cookies, cereals and cigarettes.

Memo No.: 009

MEMORANDUM

DATE: August 3, 1988

TO: Bill Miles
Richard Carlin

FROM: Norman J. Latker

In light of our recent interest in the protection of computer programs, I am attaching a current JPTOS article on the present state of patent, copyright and trade secret protection for computer programs. The article emphasizes that "all software claims are eligible for patent protection unless they simply involve the use of a mathematical formula to calculate and display a number."

NJL/kte

attachment

cc: Bob Siegel w/attachment
Carl Wootten w/attachment

NJL/kte

March 1987
Volume 69, No. 3
Pages 117–170

JOURNAL of the PATENT and TRADEMARK OFFICE SOCIETY

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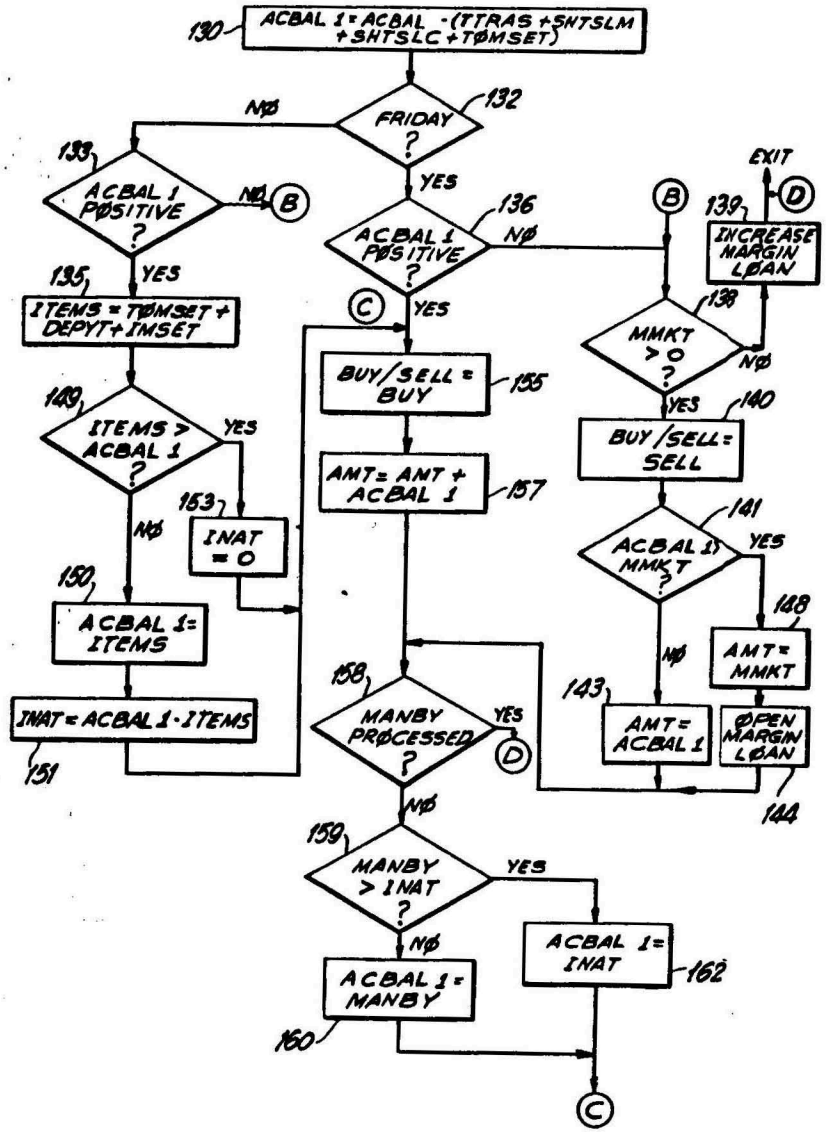


Software Protection—Integrating Patent, Copyright and Trade Secret Law

*Gregory J. Maier**

In intellectual property terms, software is a true hybrid. Although software has its origin in writing, it also possesses functionality, a property that clearly distinguishes it from ordinary writings. To write software is to formulate instructions for reconfiguring a collection of electronic logic gates and memory cells into a virtual structure capable of accomplishing a predetermined objective. Thus what begins intellectually as a form of coded writing ultimately operates as an electronic network. The same, certainly, cannot be said of other types of writings, which are simply not capable of reconfiguring logic gates, but only of expressing intellectual concepts. Similarly, other types of electronic networks are not capable of existing entirely in the form of writings. Software is a hybrid because it both expresses intellectual concepts and has the power to physically implement them with the aid of a computer.

It is the hybrid nature of software that causes its failure to fit neatly into any one existing category of intellectual property, resulting in seemingly endless confusion as to how it may best be protected. The purpose of this article is not to place software into any particular category of intellectual property protection, but rather to identify the hybrid nature of software and to demonstrate that the very different intellectual property concepts embodied within software can be coextensively protected by patent, copyright, and trade secret. This article advocates a prospectively straightforward approach to protecting the various types of intellectual property found in software: an approach in which patents protect functioning implementations of concepts, copyrights protect modes of expression, and trade secrets protect functional aspects when patent protection is unavailable or undesirable.

*Oblon, Fisher, Spivak, McClelland & Maier, P.C. The author gratefully acknowledges the assistance of Donna L. Angotti, a law review student at Georgetown University Law Center.

As patent protection for software has experienced a more troubled legal history than copyright or trade secret protection, somewhat more emphasis is placed on historical development in this area than in the other areas.

Patent Protection

Misinformation concerning patent protection for software is widespread. Many programmers still believe that software cannot be protected by patent.[1] Pamphlets and publications make erroneous statements such as: "There is little chance in obtaining a patent for software"[2] and "[T]he great majority of software does not qualify for patent protection."[3] The academic community also misperceives the utility of patent protection. A recent law review comment states that case law "suggests that processes that use computers may be patented, but that protection does not extend to software programs themselves,"[4] and that "there continues to be no protection under current patent law for the large number of computer programs that are neither embodied in firmware nor related to a process of production."[5]

Confusion regarding the nonpatentability of software is not the fault of academic writers, but has its origin in case law.

The most troubling aspect of the case law is the part played in its development by the Patent and Trademark Office (PTO) because one would think that the PTO, the nation's only agency empowered to issue patents, would have had an interest in encouraging, rather than discouraging, the patenting of new technology. Early decisions of the Court of Custom and Patent Appeals (the predecessor of the Court of Appeals for the Federal Circuit) strongly suggested that the CCPA judged software patentable by the same standards as any other technology.[6] It was the PTO that originated the theory that software did not fall within the broad statutory classes of patentable technology set forth in 35 U.S.C. 101.[7] Sadly, this theory had its origins in bureaucratic concerns over workload, rather than in careful theoretical analysis.[8] In the early 1970's, the PTO anticipated a deluge of software applications at a time when it did not have the resources to hire skilled software examiners.[9] Worry about workload and backlog motivated the PTO to lead the fight against software patentability.

The fight was against the respected logic of the CCPA and led to several rather tentative Supreme Court decisions.[10]

The first such decision was *Gottschalk v. Benson*,[11] which involved a method for converting binary coded decimal numerals directly into binary numerals for use with a general purpose digital computer. The court stated that, since the mathematical formulas in the claimed process involved had no application except in connection with a computer, any patent "would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself."[12] Despite the courts' noble attempt at a theoretical explanation of its preemption theory, its conclusion was influenced more by the cry for help from the PTO[13] than by sound principles of intellectual property law. In its opinion, the court cited the PTO's lack of classification techniques and search files to handle the supposed burden of examining software applications.[14] The court, persuaded by the PTO, felt that there was sufficient growth in the software industry without need for patent protection.[15] Thus the Supreme Court, instigated by the PTO, relied as much upon bureaucratic economic arguments as legal principles in foreclosing one of the fastest growing areas of technology from adequate patent protection.

1 ABA Comm. On Computer Software, Res. 406-3, discussion (1986)).

2 *Id.* (quoting How to Copyright Software and Secure Trademarks (Sofprotex ed. n.d.)).

3 *Id.* (quoting Salone, How to Copyright Software (1984)).

4 Comment, *Combating Software Piracy: A Statutory Proposal to Strengthen Software Copyright*, 34 De Paul L. Rev. (1985), at 1005.

5 *Id.* at 1006.

6 *See In re* Benson, 441 F.2d 682 (C.C.P.A. 1971), *rev'd sub nom.* Gottschalk v. Benson, 409 U.S. 63 (1972); *In re* Flook, 559 F.2d 21 (C.C.P.A. 1977), *rev'd sub nom.* Parker v. Flook, 437 U.S. 584 (1978).

7 *See* Parker v. Flook, 437 U.S. 584, 587–588 (1978), *rev'g In re* Flook, 559 F.2d 21 (C.C.P.A. 1977).

8 *See id.*

9 *See id.*

10 *See, e.g.*, Gottschalk v. Benson, 409 U.S. 63 (1972), *rev'g In re* Benson, 441 F.2d 682 (C.C.P.A. 1971); Dann v. Johnston, 425 U.S. 219 (1976), *rev'g In re* Johnston, 502 F.2d 765 (C.C.P.A. 1974) (finding obvious claims to a machine system for automatic recording of bank checks and deposits under which checks and deposits are customer labeled with code categories which are processed by a data processor and permitting a bank to furnish a customer with a categorized breakdown of his transactions, despite the fact that the prior art did not possess the ability to allow a large number of small users to get the benefit of a large scale computer and still use individual bookkeeping methods); *Flook*, 437 U.S. 584.

11 *Benson*, 409 U.S. 63.

12 *Id.* at 72.

13 *See id* at 72–73 (quoting Report of the President's Commission on the Patent System (1966)).

14 *Id.*

15 *See id.* at 72. Without reviewing the scope or desirability of copyright protection, the court concluded that it was available.

The CCPA resisted the Supreme Court's questionable logic and there ensued a further conflict between the courts.[16] Subsequently in *Parker v. Flook*, involving a method for updating alarm limits during catalytic conversion processes, the Supreme Court set forth its "point of novelty test" that a claim was directed to unpatentable subject matter if the point of novelty lay in the formula or algorithm recited in the claims.[17] Conventional or obvious post-solution activity was not sufficient to transform an unpatentable principle into a patentable process.[18] The court again considered the PTO's interest in not having to process "thousands of additional patent applications."[19]

This case truely marks the low point for patent protection of software inventions. The court's approach improperly imported into its analysis of eligibility of subject matter for patent protection (under § 101) the considerations of novelty and "inventiveness" which are the proper concerns of §§ 102 and 103.[20] The point of novelty test is wholly inconsistent with the conventional view that a patent claim must be considered as a whole.

Just prior to *Flook*, the CCPA had expressed its opinion that the "point of novelty" approach was inappropriate,[21] and had set forth its two step *(Freeman)* analysis for determining whether a claim preempts nonstatutory subject matter as a whole:

> First, it must be determined whether the claim directly or indirectly recites an algorithm in the *Benson* sense of that term, for a claim which fails even to recite an algorithm clearly cannot wholly preempt an algorithm. Second, the claim must be further analyzed to ascertain whether in its entirety it wholly preempts that algorithm.[22]

The *Freeman* court addressed the confusion regarding the word "algorithm." The *Benson* court had defined an algorithm as "A procedure for solving a given type of mathematical problem."[23] In *Freeman*, the CCPA rejected a broader definition of an algorithm as "a step-by-step procedure for solving a problem or accomplishing some end."[24] Such a definition, said the court, is "unnecessarily detrimental to our patent system and leads to reading the word 'process' out of the statute."[25] The CCPA interpreted *Benson* as concerned only with mathematical algorithms.[26]

Following *Flook*, the CCPA once again rejected the "point of novelty" approach.[27] The CCPA did not read *Flook* as adopting a "point of novelty" test (despite the fact that this is exactly what the Supreme Court had done) because it could not believe that "the Supreme Court has acted in a manner so potentially destructive."[28] The CCPA restated the second step of the *Freeman* test:

> 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.[29]

Finally, in *Diamond v. Diehr*, the Supreme Court changed direction and upheld the eligibility for patent protection for claims drawn to a process for curing synthetic rubber.[30] The *Diehr* Court rejected the "point of novelty" approach by saying,

> In determining the eligibility . . . for patent protection[,] . . . claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. . . . The question therefore of whether a particular invention is novel is wholly apart from whether the invention falls into a category of statutory subject matter.[31]

The confusion between the requirements of § 101 and those of §§ 102 and 103 was at last resolved. The court also addressed the confusion

16 Meyer, *Patentability of Business Methods Implemented by Computer*, 2 Computer Law. 12, 14 (Feb. 1985); *see* Diamond v. Diehr, 450 U.S. 175, 205 (1981) (Stevens, J., dissenting), *aff'g In re* Diehr, 602 F.2d 982 (C.C.P.A. 1979).
17 *See Flook*, 437 U.S. at 594.
18 *See id.* at 590.
19 *Id.* at 587–588.
20 *Id.* at 600 (Stewart, J., dissenting).
21 *In re* Freeman, 573 F.2d 1237–1243 (C.C.P.A. 1978) (involving a system for typesetting alphanumeric information which positions mathematical symbols in an expression in accordance with their appearance while maintaining the mathematical integrity of the expression).
22 *Id.* at 1245.
23 *Benson*, 409 U.S. at 65.
24 *Freeman*, 573 F.2d at 1245–1246.
25 *Id.* at 1246.
26 *Id.*
27 *See In re* Walter, 618 F.2d 758, 766 (C.C.P.A. 1980) (involving a method and apparatus for cross-correlating return jumbled signals with the original signal which was transmitted into the earth in seismic prospecting and surveying).
28 *Id.*
29 *Id.* at 767.
30 *Diehr*, 450 U.S. 175.
31 *Id.* at 188–189.

regarding the term "algorithm," rejecting the broad definition espoused by the PTO[32] and affirming the narrow definition set forth in *Benson*.[33]

Though the majority in *Diehr* attempted to distinguish *Diehr* from *Flook* on the grounds that Flook's claimed invention contained insignificant post-solution activity while Diehr's claimed invention transformed or reduced an article to a different state or thing,[34] this distinction is questionable in technical terms. Stevens' dissent in *Diehr* provides an excellent analysis of the striking similarity in the method of updating the curing time calculation in *Diehr* and the method of updating the alarm limit in *Flook*.[35] His analysis concludes that the most significant difference between the cases was not in the characteristics of the inventions, but rather the manner in which the claims were drafted.[36] If this analysis is accepted as accurate, it is clear that the *Flook* and *Diehr* cases should have been decided the same way,[37] in favor of eligibility for patent.

Later in *Diamond v. Bradley*, the Supreme Court affirmed the CCPA in holding that there was no "algorithm" in an invention relating to a firmware module which directs data transfers between registers and memory.[38] This solidified the narrow definition of the term "algorithm" adopted in *Benson*.

The CCPA further clarified the meaning of the term "algorithm," holding in *In re Pardo* that the applicants' use of the term "algorithm" to describe the invention is not an admission of nonstatutory subject matter.[39] The court found no mathematical formula or calculation present in the claims in the case.[40]

32 *Id.* at note 9. The PTO defined the term "algorithm" as:

1. A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps. 2. A defined process or set of rules that leads [sic] and assures development of a desired output from a given input. A sequence of formulas and/or algebraic/logical steps to calculate or determine a given task; processing rules.

33 *Id.* at 186 (algorithm defined as a procedure for solving a given type of mathematical problem).

34 *Id.* at 191–193.

35 *Id.* at 209–210 (Stevens, J., dissenting).

36 *Id.* at note 32 (Stevens, J., dissenting).

37 The reasoning in Stevens' dissent goes astray in analyzing the requirements of §101 and §102. The dissent would further the confusion regarding the term "algorithm" by presenting yet another definition of the term:

"the term algorithm . . . is synonymous with the term computer program." *Id.* at (Stevens, J., dissenting).

Furthermore, the dissent considers the burden on the PTO in deciding the case. *Id.* at 219.

38 Diamond v. Bradley, 450 U.S. 381 (1981), *aff'g In re* Bradley, 600 F.2d 807 (C.C.P.A. 1979).

39 *In re* Pardo, 684 F.2d 912 (C.C.P.A. 1982).

40 *Id.* at 916.

The CCPA again refined and finalized the *Freeman* software patentability test in the case *In re Abele*[41] stating: "Thus, if the claims would be 'otherwise statutory,' id., albeit inoperative or less useful without the algorithm, the claim likewise presents statutory subject matter when the algorithm is included."[42] The court found some claims ineligible for patent protection because they were "no more than the calculation of a number and display of the result, albeit in a particular format,"[43] while other similar claims were deemed eligible for patent protection.

The inescapable conclusion to be drawn from this case law is that all software claims are eligible for patent protection unless they simply involve the use of a mathematical formula to calculate and display a number.[44]

Software patentability is a *de facto* reality today, as the PTO now commonly issues patents for software inventions. Examples of patented software inventions include a process for a management control system for multiprogrammed data processing,[45] a method of constructing a task program for operating a word processing system,[46] a program that checks for spelling errors,[47] and a program that converts one programming language into another (an RPG to COBOL compiler).[48]

A patent for an AC current control system is an example of how close claims can come to reciting calculations and still be accepted by the Patent Office.[49] Patents for software systems involving artificial intelligence have also been granted.[50]

Perhaps the best known software patent was issued to Merrill Lynch for a Securities Brokerage and Cash Management System.[51] This patent was the subject of a court action which resulted in an opinion denying a motion for summary judgment of invalidity under

41 *In re* Abele, 684 F.2d 902 (C.C.P.A. 1982).

42 *Id.* at 907.

43 *Id.* at 909.

44 Sumner, *The Versatility of Software Patent Protection: From Subroutines to Look and Feel*, 3 Computer Law. 1, 3 (June 1986). An approach treating patent claims directed to subject matter implemented at least in part with software the same as other inventions has been adopted by the ABA. ABA Comm. on Computer Software, Res. 406-3 (1986).

45 U.S. Patent 3,618,045.

46 U.S. Patent 4,308,582.

47 U.S. Patent 4,355,371.

48 U.S. Patent 4,374,408.

49 U.S. Patent 4,555,755.

50 U.S. Patents 4,593,367 and 4,599,693.

51 U.S. Patent 4,346,442.

35 U.S.C. § 101 for not claiming patentable subject matter.[52] The decision, following earlier CCPA precedent, rejected the contention that a computer program is inherently an algorithm[53] and found no direct or indirect recitation of a procedure for solving a mathematical problem.[54]

This initially favorable court action, together with the issuance of software patents by the PTO, lends considerable support to the premise that software is now generally patentable subject matter.

Stating that software is "patentable" is somewhat misleading because, as has been explained, software is a complex hybrid in terms of the intellectual property concepts it embodies. More accurately, the intellectual property embodied in the functional aspects of the software is protected by patent. The mode of expression embodied in the code that comprises the software is not specifically protected by patent, but the basic organization of the software and the manner in which it operates are in principle protectable by patent—assuming all other standard requirements for patentability are met. Thus, while a patent may not protect against copying the mode of expression found in a software code, it would provide the legal right to prevent others from making, using, or selling the claimed software invention. On the other hand, it is difficult to imagine a situation in which copying a software code would not also result in patent infringement.[55]

One of the important advantages of patents over copyrights is that patents protect against independent development, while copyrights only protect against derivation from protected works. Thus, a broadly claimed software patent could provide protection against a range of independently developed software, including programs achieving similar results with differing code structures, while copyright would provide no protection.

52 Paine, Webber, Jackson and Curtis, Inc. v. Merrill Lynch, Pierce, Fenner and Smith, Inc.; 564 F. Supp. 1358 (D. Del. 1983).

53 *See id.* at 1367, 1368.

54 *Id.* at 1368. The court then addressed the issue of whether the claims were drawn to nonstatutory subject matter for claiming a method of doing business. The court held that the claims effectuating a useful business method would be unpatentable if done by hand but pass the requirements of § 101 since they teach a method of operation on a computer to effectuate a business activity. *Id.* at 1369. For a discussion of the effect of the definition of "algorithm" on the issue of patent eligibility for methods of doing business, see Meyer, *supra* note 16, at 15, 16.

55 A discussion of the manner of enforcing by an infringement suit a method or system-apparatus claim for a software invention, against producers and distributors of software as well as against users, is beyond the scope of this article. It is noted that legal theories such as contributory infringement and inducement may be explored.

The patent's advantage in broader protection is, to an extent, offset by the significantly higher cost and levels of difficulty in securing protection relative to the simplicity and low cost of obtaining a copyright. When basic or valuable software concepts are at stake, however, the cost and effort involved in obtaining patent protection are minor compared to the insurance value of the rights obtained.

Copyright Protection

Copyright protects original works of authorship,[56] meaning the intellectual property embodied in the mode of expression by which intellectual concepts are conveyed.[57] The copyright law expressly prohibits copyright protection of any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described.[58] A Copyright therefore, as applied to software, would appear to protect only the intellectual property embodied in software as a mode of expression.[59] Copyright arms its owner with the legal right to prevent copying of the protected work, to prevent the distribution of copies, and to prevent the preparation of derivative works;[60] all of which are valuable rights, since software is easily copied.

The originality and creativity of a computer program may lie in the appearance and presentation of software, known as the "look and feel."[61] Many have favored extending copyright to protect the mode of expression embodied in the "look and feel"[62] as well as the literal text of software.

56 17 U.S.C. § 102(a).

57 *See* Baker v. Selden, 101 U.S. 99 (1880) (setting forth the distinction between the description of the art which may be secured by copyright and the art itself which may only be secured by patent).

58 17 U.S.C. § 102(b).

59 Applying the idea/expression dichotomy to computer programs, the court in Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1252 (3d Cir. 1983), identified the expression adopted by the programmer as the copyrightable element in a computer program.

60 17 U.S.C. § 106.

61 Russo and Derwin, *Copyright in the "Look and Feel" of Computer Software*, 2 Computer Law. 1 (Feb. 1985).

62 *Id.* at 11; *see* Whelan Assocs. v. Jaslow Dental Lab., Inc., 797 F.2d 1222 (3d Cir. 1986), *aff'g*, 609 F. Supp. 1307 (E.D. Pa. 1985) (discussed in following text), SAS Inst., Inc. v. S & H Computer Sys., Inc., 605 F. Supp. 816 (M.D. Tenn. 1985) (applying a broad test for substantial similarity and finding infringement in adopting the organizational scheme of another's code even though this code was independently written), Comment, *supra*, note 4, at 1019–1022. The court in Williams v. Arndt, 626 F. Supp. 571 (D. Mass 1985) extended the scope of copyright protection by finding liability in translating a prose work into computer language. See Gesmer, *Developments in the Law of Computer Software Copyright Infringement*, 26 Jurimetrics 224 (Spring 1986) for a discussion of the role of facts amounting to misconduct in *Whelan*, *SAS*, and *Arndt*.

To constitute copyright infringement, there must be substantial similarity between the accused work and the work copyrighted, and that similarity must have been caused by the infringer "copying" the copyright owner's work.[63] Those in favor of protecting the "look and feel" of software by copyright adopt the position that two works are substantially similar if the "total concept and feel" of the works are alike.[64]

The farthest extension of copyright protection of computer programs can be found in *Whelan Associates, Inc. v. Jaslow Dental Lab.*,[65] a recent landmark decision holding that copyright protection of computer programs may extend beyond the programs' literal code to their structure, sequence, and organization. The court of appeals affirmed a holding which broadly defined the expression of an idea in a computer program as "the manner in which the program operates, controls and regulates the computer in receiving, assembling, calculating, retaining, correlating, and producing information either on a screen, print-out or by audio communication."[66] This case is very significant in extending the scope of copyright protection to methods of operation, procedures; and processes which would appear to have been expressly excluded from copyright protection under 17 U.S.C. 102(b) and which are perhaps better protected by patent.[67]

The rationale relied upon in favor of extending copyright protection for computer programs includes: 1) the belief that computer programmers deserve some form of protection for the intellectual property they create; and 2) the assumption that there exists no other adequate means of protection.[68] In *Whelan* the court was concerned with providing the "proper incentive for programmers by protecting

63 Roth Greeting Cards v. United Card Co., 429 F.2d 1106 (9th Cir. 1970) (finding infringement of the association of elements of a greeting card despite the lack of infringement of any of the individual elements).

64 *See* Comment, *supra*, note 4, at 1019. The "total concept and feel" test originated in *Roth*, 429 F.2d at 1106. *Roth* is criticized for finding the whole work greater than the sum of its parts. *Id.* at 1110.

65 *Whelan*, 797 F.2d 1222.

66 Whelan Assocs. v. Jaslow Dental Lab. Inc., 609 F. Supp. 1307, 1320 (E.D. Pa. 1985), *aff'd*, 797 F.2d 1222 (3d Cir. 1986).

67 Patents are meant to protect utilitarian creations. Patent protection can be viewed as stronger than copyright protection in that there is no defense of independent development against a claim of patent infringement.

68 *See* Comment, *supra*, note 4; Final Report of National Commission on New Technological Uses of Copyrighted Works (1978), *reprinted in* A. Latman, Copyright for the 80's 129 (1985).

their most valuable efforts."[69] (Since patent protection was not considered applicable at the time the software was created.)

The expansive definition of "expression" in *Whelan* could be interpreted as extending copyright protection to the internal workings of a computer, not the traditional subject of copyright,[70] and suggesting a substantial area of overlap between patent and copyright protection.

In effect, copyright protection has been stretched in *Whelan* to fill the gap left when the courts denied software inventions patent protection. Stretching copyright protection is understandable, from an equitable point of view, to protect software authors/inventors who were discouraged from seeking patent protection due to the changing status of the law regarding the patentability of software inventions. The equities are particularly important in cases involving misconduct. Prospectively, however, as the intellectual property community accepts the notion that software is patentable, there may ultimately be little need to so stretch the bounds of copyright protection.

It should be noted further that there is no central appeals court for copyrights as there is for patents. Thus, the scope of copyright law in protecting software may vary among the circuit courts of appeals. This fact, and the unusual circumstances of *Whelan*, suggest that it may not be prudent to conclude that copyright protection will be applied with the same breadth as in *Whelan* by other courts faced with other factual circumstances. Nonetheless, *Whelan* is an important precedent when one must rely exclusively upon copyright in software litigation.

One must not suppose that copyright and patent protection are in any way at odds. Copyright protection can mesh very neatly with patent protection to provide a unique continuum of intellectual property protection in the software environment. Copyright protects against literal copying and against slavish imitation of code or mode of expression.[71] Patent protects against infringing use, whether through derivation or independent development, of the broader functional aspects of software. Thus the combination of available copyright and patent protection would appear to make software the most protectable of all technology—a far cry from its position a decade ago.

69 *Whelan*, 797 F.2d at 1236.

70 *Copyright in the Look and "Feel" of Computer Software*, 309 Copyright and New Technology 181 (1985).

71 *See supra*, notes 57–59 and accompanying text. *But see supra*, notes 65–69 and accompanying text.

Trade Secret Protection

Trade Secret law has also been relied upon to partially fill the void left when software was denied patent protection by the courts. The Uniform Trade Secret Act presents the following definition of a trade secret:

> Trade secret means information, including but not limited to, a formula, pattern, compilation, program, device, method, technique, or process, that:
> 1. Derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and
> 2. Is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.[72]

Under this basic definition of trade secret, it is clear that a computer program including logic, structure, and organization can qualify for trade secret protection as long as it is not generally known.[73] Where major software is developed by corporations for internal use, or where a very limited distribution of software is anticipated, the traditionally required level of secrecy is easily maintained. Similarly, if software is developed for sale on a limited basis, contractual or licensing provisions can easily be provided to maintain trade secret protection. But in mass marketing software to over-the-counter customers, it is certainly questionable as to whether an adequate degree of secrecy can be maintained,[74] or whether any contractual trade secrecy provisions can be enforced to the extent traditionally required for trade secret protection.[75]

The concept of "shrink-wrap licensing" was developed in an intriguing attempt to accommodate the situation. Due to the dubious common law basis for enforcing shrink-wrap trade secret clauses,[76]

72 Unif. Trade Secret Act.
73 Rice, *Trade Secret Clauses in Shrink-Wrap Licenses*, 2 Computer Law. 17 (Feb. 1985).
74 *See id.* at 18.
75 *See id.* at 18, 19.
76 A non-disclosure clause in a shrink-wrap license neither evidences nor creates a confidential relationship since special facts are required to transform an arms-length market transaction to a confidential one. *Id.* Furthermore, the remoteness of the parties precludes a finding of negotiated terms, and consequently, it would be difficult to enforce the clauses on contract theory. *Id.* at 19.

states such as Louisiana have enacted laws to give these clauses legal effect.[77]

Just as in the area of copyrights, the "shrink-wrap" extension of trade secret law to protect mass marketed software might be interpreted as a response to a perceived lack of adequate protection by patent. Given that many software authors/inventors have been discouraged from seeking patent protection, it is understandable that techniques such as shrink-wrap licenses including trade secret clauses would be developed in order to obtain at least a modicum of intellectual property protection. Indeed, in some circumstances such as low cost, short life span or unpatentable software, such inexpensive protection may be all that is economically justified or available. But for more valuable, more unique software where patent protection is available, shrink-wrap licenses may be needed only while patents are pending, or not at all.

Trade Secrets and Patent Disclosure

Patent protection may, of course, coexist with trade secret protection.[78] Trade secret protection may be important during the pendency of a patent application, and may even protect undisclosed details of an invention during the term of, or after the expiration of, the patent. As trade secret protection is relinquished to the extent an invention is disclosed in a patent application, there is sometimes motivation to minimize the disclosure made in a patent application in order to obtain broad patent protection and yet retain significant trade secret protection. In software terms, this can mean a patent disclosure that does not reveal any code.

Under 35 U.S.C. § 112, first paragraph, one must disclose the invention "in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use" it.[79] The best mode of carrying out the invention must also be disclosed.[80] A present issue of controversy is whether a program listing or other detailed code disclosure must be made in order to satisfy

77 *Id.* at 20. Such laws might perhaps be challenged on constitutional grounds for giving patent-like protection in perpetuity, which violates the basic policy central to federal patent law. There are also possible conflicts with federal antitrust laws. Due to the uncertain theoretical basis of shrink-wrap trade secret clauses, any protection provided is fraught with doubt. *Id.*
78 Sumner, *supra*, note 44 at 4.
79 35 U.S.C. § 112.
80 *Id.*

these statutory requirements. In the case of *In re Sherwood*,[81] disclosure of the listing of the program was found unnecessary to satisfy the best mode requirement because an outline of the methodology used was provided, and detail of the code was considered to be within the ability of typical programmers. On the other hand, in *White Consolidated*[82] a patent was invalidated for failure to comply with the disclosure requirements under 35 U.S.C. § 112 because key software was not disclosed. However, in *White Consolidated* no effort was made to disclose the missing software, other than an attempt to incorporate it into the patent by reference. Since the software in question was considered a trade secret and was not publicly available, the court correctly concluded that the patent was invalid. Had the patent included a software disclosure of the level found in the *Sherwood* case, it may be assumed that the patent in *White Consolidated* would have been found valid.

Regarding this disclosure question, it is well established law that there is no need to describe any invention in the detail needed for direct production.[83] Reasonable experimentation may be required to make and use an invention disclosed in a patent specification. To require an applicant for a software patent to provide a complete program listing would raise the standard of disclosure for software inventions far above that for any other technology.[84] Such a requirement would require that an invention be disclosed so that a person of virtually no programming experience would be able to make and use it. Furthermore, all trade secrets in the program listing would be lost through publication. In general, therefore, it is consistent with well established law that complete program listings should not be required to satisfy statutory disclosure requirements in software patent applications. Disclosure of algorithms and techniques of attaining results sought must be described, but nothing further, as long as an ordinary skilled programmer could be expected to draft a workable code with no more than a reasonable degree of difficulty based upon the disclosure.

81 *In re* Sherwood, 613 F.2d 809 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981).

82 *White Consol. Indus. v. Vega Servo-Control, Inc.*, 713 F.2d 788 (Fed. Cir. 1983).

83 Ill. Tool Works, Inc. v. Foster Grant Co., Inc., 547 F.2d 1300 (7th Cir. 1976), *cert. denied*, 431 U.S. 929; *aff'g*, 395 F. Supp. 234 (N.D. Ill. 1974) (exact identity of description is not required by the enablement requirement).

84 *But see* Comment; *The Disclosure Requirements of 35 U.S.C. § 112 and Software-Related Patent Applications: Debugging the System*, Conn. L. Rev. 1.

Block diagrams, flow charts and top-down diagrams are presently considered the preferable means of disclosing a program, as a person does not have to understand any particular computer language to understand such diagrams.[85] Whether or not a program listing is provided, a detailed and clearly written narrative of the program is required, since most patents examiners are not enthusiastic about disecting computer listings and normally will not issue patents on inventions they don't understand.[86]

Happily, the disclosure questions for software inventions appear to be resolving themselves to a degree. Disclosure must be sufficient for one of ordinary skill in the art, at the time of the invention, to make and use the invention without "undue experimentation."[87] What is considered "undue experimentation" depends upon the nature of the invention and the level of "ordinary skill" in the art.[88] As the experience of nearly all technically educated people with software is increasing rapidly, it becomes apparent that "ordinary skill" today is nearly as common as it was rare a decade ago. Furthermore, today's rapid spread of computer technology in schools and even homes will assure continued growth in the level of sophistication among those of "ordinary skill." As a result, issues concerning fulfillment of the statutory disclosure requirements for software inventions should become less significant in the future.

Conclusion

Now that the courts and PTO have abandoned their excessive concern over the job of examining software applications, patent protection is presently available for virtually all software inventions. As software authors/inventors come to understand this, extensions of copyright and trade secret law to protect functionality will be less necessary. Patent, copyright, and trade secret law will again be able to resume their traditional scopes and continue their complementary relationships, particularly in protecting intellectual property embodied in software.

85 *See* Hirschfeld v. Banner, 462 F. Supp. 135, 141–142 (D.D.C. 1978) (Markey, C. J., C.C.P.A., sitting by designation), *aff'd mem.*, 615 F.2d 1368 (D.C. Cir. 1980), *cert. denied*, 450 U.S. 994 (1981).

86 *But see* Comment, *supra*, note 84 at 18–19.

87 *Hirschfeld*, 462 F. Supp. at 142.

88 *See White Consol.*, 713 F.2d at 791, (where the details of a program were required to be disclosed since no suitable substitutes were known or available and could not be obtained without 1½ to 2 years of effort).

Memo No.: 007

MEMORANDUM

DATE: July 25, 1988

TO: Jack Karnowski

FROM: Norm Latker

SUBJECT: USET's Space Requirements - McLean, Virginia

I have your July 18 memo. I understand that there will be no move until all our space at 8000 Westpark Drive can be disposed of in one action.

Attached is a paper Jim Liverman prepared at my request on our space requirements. The 1,320 square feet is consist with your 850 square feet since it includes a conference room and other service space.

If Jim Terragno ultimately takes the entire floor, you may be able to use our suggested space plan.

NJL/kte

service space

JULY 20, 1988

TO: NORM LATKER.

FROM: JIM LIVERMAN

SUBJECT: OFFICE SPACE

As per your request attached is a draft look at office space that would be needed if we moved to a downtown location or near a metro station.

Attached are FIVE SHEETS as follows:

1. Table showing square feet under two options and the respective costs under several costs per square foot.
2. A floor plan with inclusions for Option A - 1320 ft sq. three professionals plus a secretary.
3. A floor plan showing space for 6 people but only 4 in the initial cadre.
4. A floor plan showing space fully occupied for 6 people.
5. A graph showing total annual cost vs cost/sq ft for the two options.

The best of the lot would seem to be to go for the larger space (3 above) or one with an option to increase to this size as need actually arises.

If in fact we intend to put a TLO here to help work & follow thru on the Government leads we get, then it will become urgent to add someone in the near future thus the pressure for space may become immediate.

I suspect that if we locate anywhere near Metro Center, which does have many advantages for out of town clients etc, then the price per sq foot is likely to be at the $20-25 per foot. Thus we would seem to be talking about $26-40K/year for space.

In discussing this matter with Karnowski today he says that we may be stuck with staying in the McLean quarters for sometime to come unless some one wants to take over the whole thing. In any case he would like to see the options we are considering so in case something moves fast he will have some feeling for our needs and what is behind them.

I suggest you forward a copy of this memo and the attachements to Karnowski with a cover letter from you so that we have a record of its having been sent.

If in fact we intend to put a TLO here to help work & follow

SQFTSP01.WK1

	SIZE FT SQ	SQ FT RM	# STAFF	SQ FT	# STAFF	SQ FT
SPACE:			4		6	
DIRECTOR	12 X 16	192	1	192	1	192
STAFF	12 X 14	168	2	336	3	504
SECRETARY	6 X 8	48	1	48	2	96
CONFERENCE	12 X 18	216		216		216
COPIER	8 X 6	48		48		48
SUPPLIES	3 X 6	18		18		18
KITCHEN AREA	5 X 8	40		40		40
FILES	3 X 18	54		54		54
COMMON SPACE				368		592
	TOTAL SQ FT			1320		1760

$ COST/SQ FT		
12	$15,840.00	$21,120.00
16	$21,120.00	$28,160.00
18	$23,760.00	$31,680.00
20	$26,400.00	$35,200.00
22	$29,040.00	$38,720.00
24	$31,680.00	$42,240.00
26	$34,320.00	$45,760.00

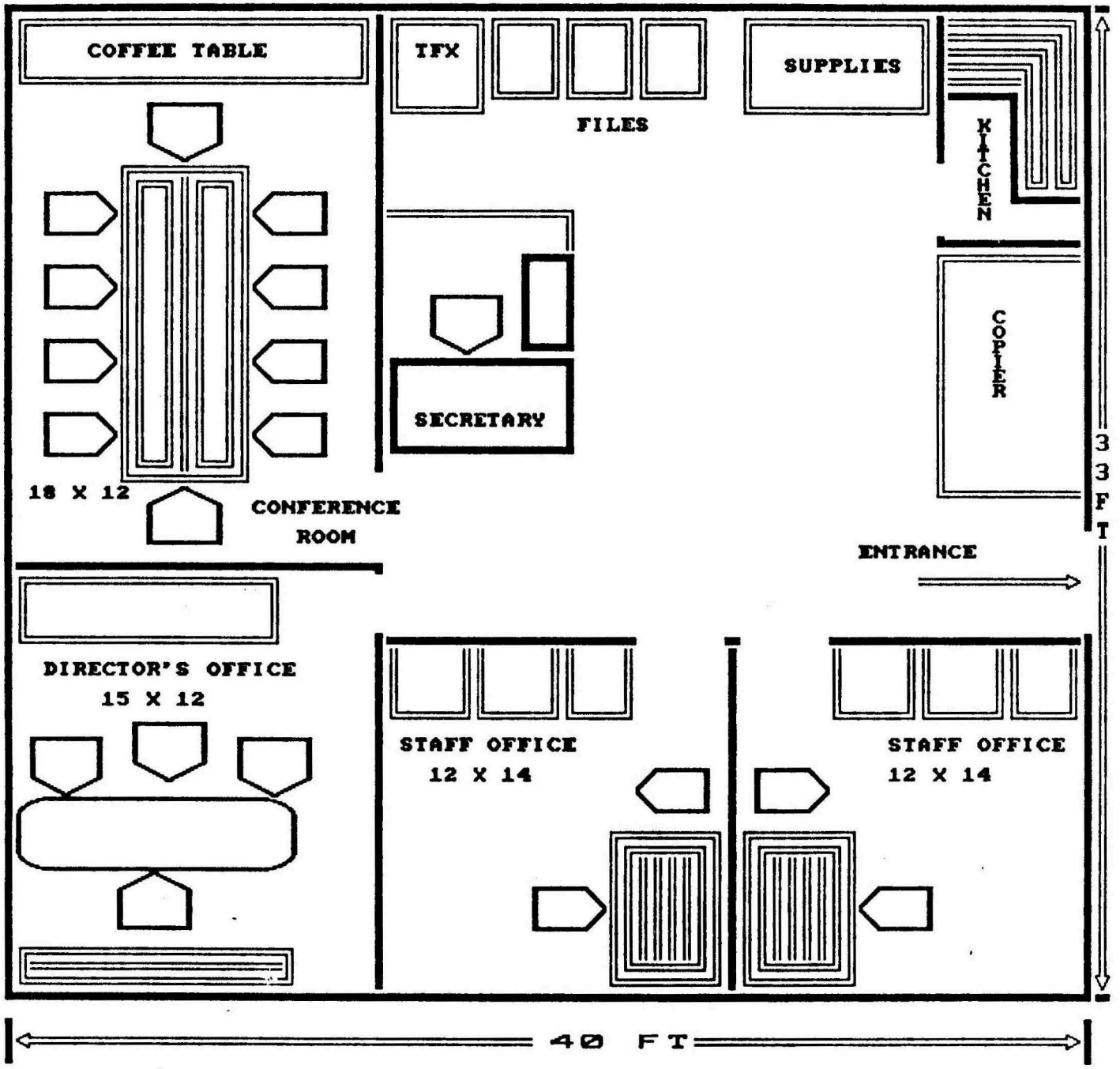
While it is not clear that space of the exact configuration shown is in fact available - at least the general layout is what will be needed. The exact space could be slightly different because of layout.

Three looks have been taken at the space requirements. Option A above allows for a bare minimum of 3 professionals plus 1 secretary which is considered the minimum for continuation of activities to build data bases and work the government streets.

Option B would be to lease enough space to increase the staff to six which would be either 5 professionals plus a secretary or 4 professionals plus 2 secretaries at such time as appropriate. The increased cost at the $22/ft sq would increase the cost by $9000/yr. If an option to lease additional space at a later date could be found that would be an acceptable solution.

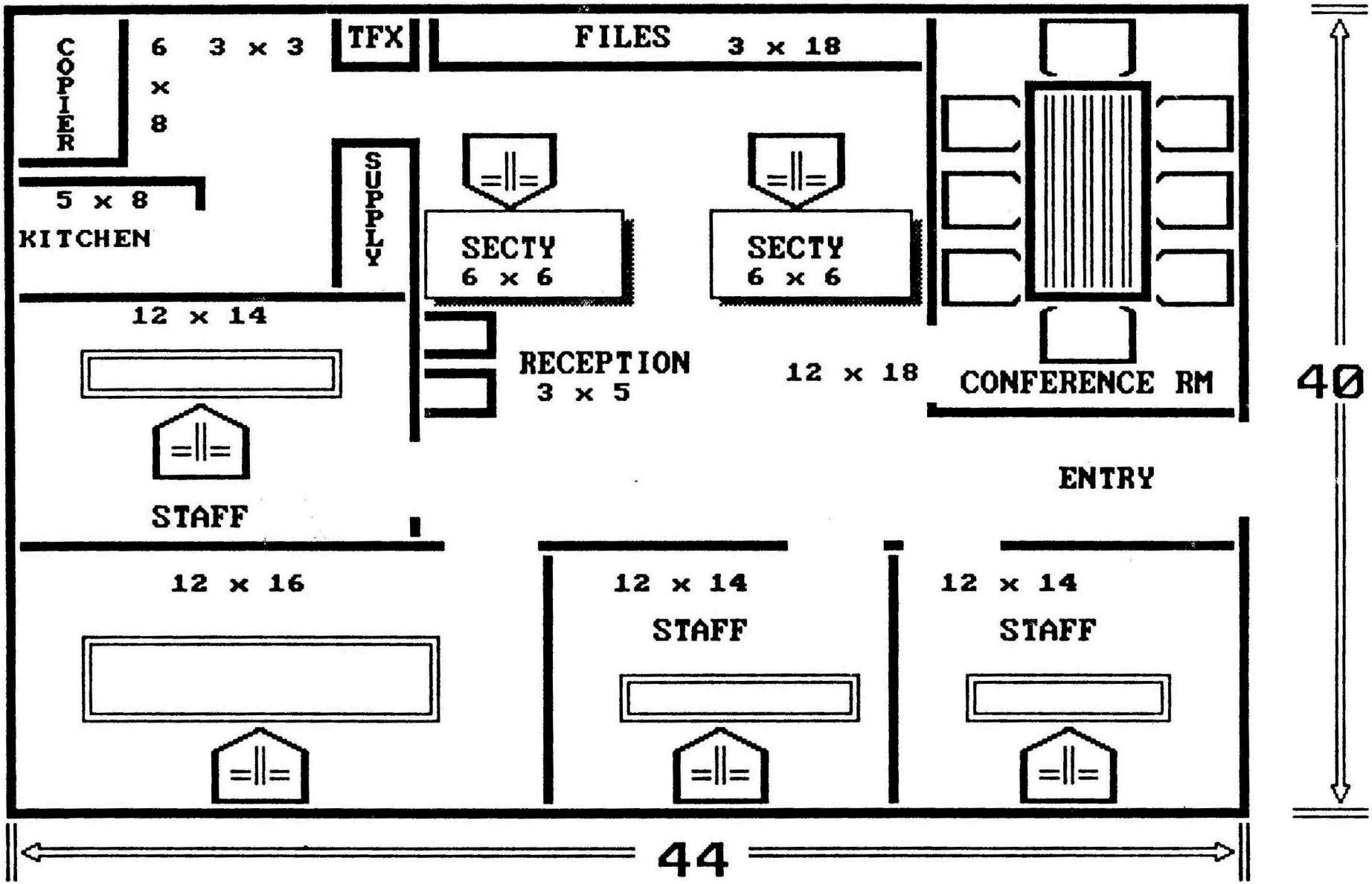
USET MINIMUM STAFFING AND SPACE

1320 FT SQ

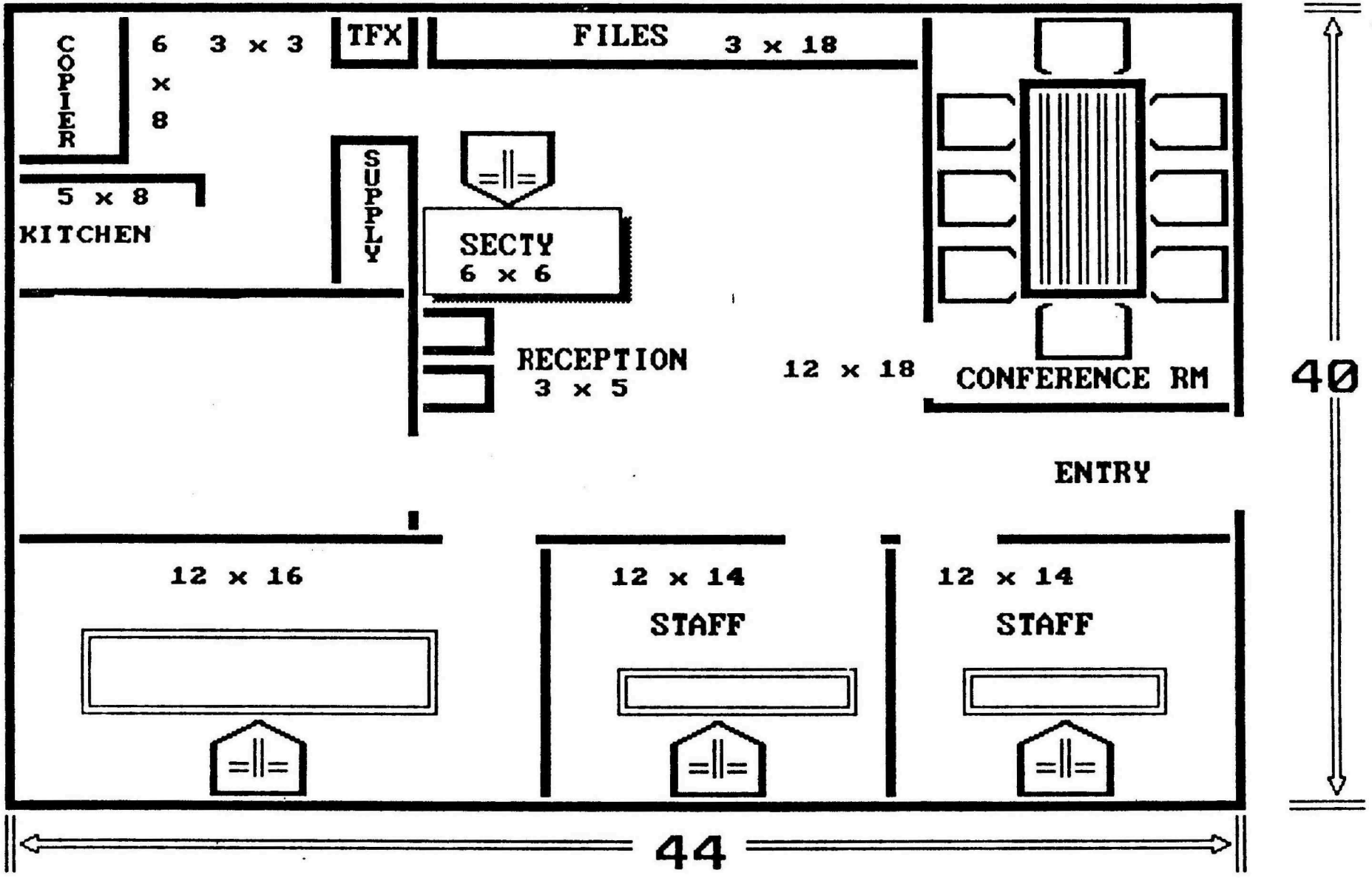


USET IDEALIZED STAFFING & SPACE
4 PROFESSIONALS & 2 SECRETARIES
1760 FT SQ

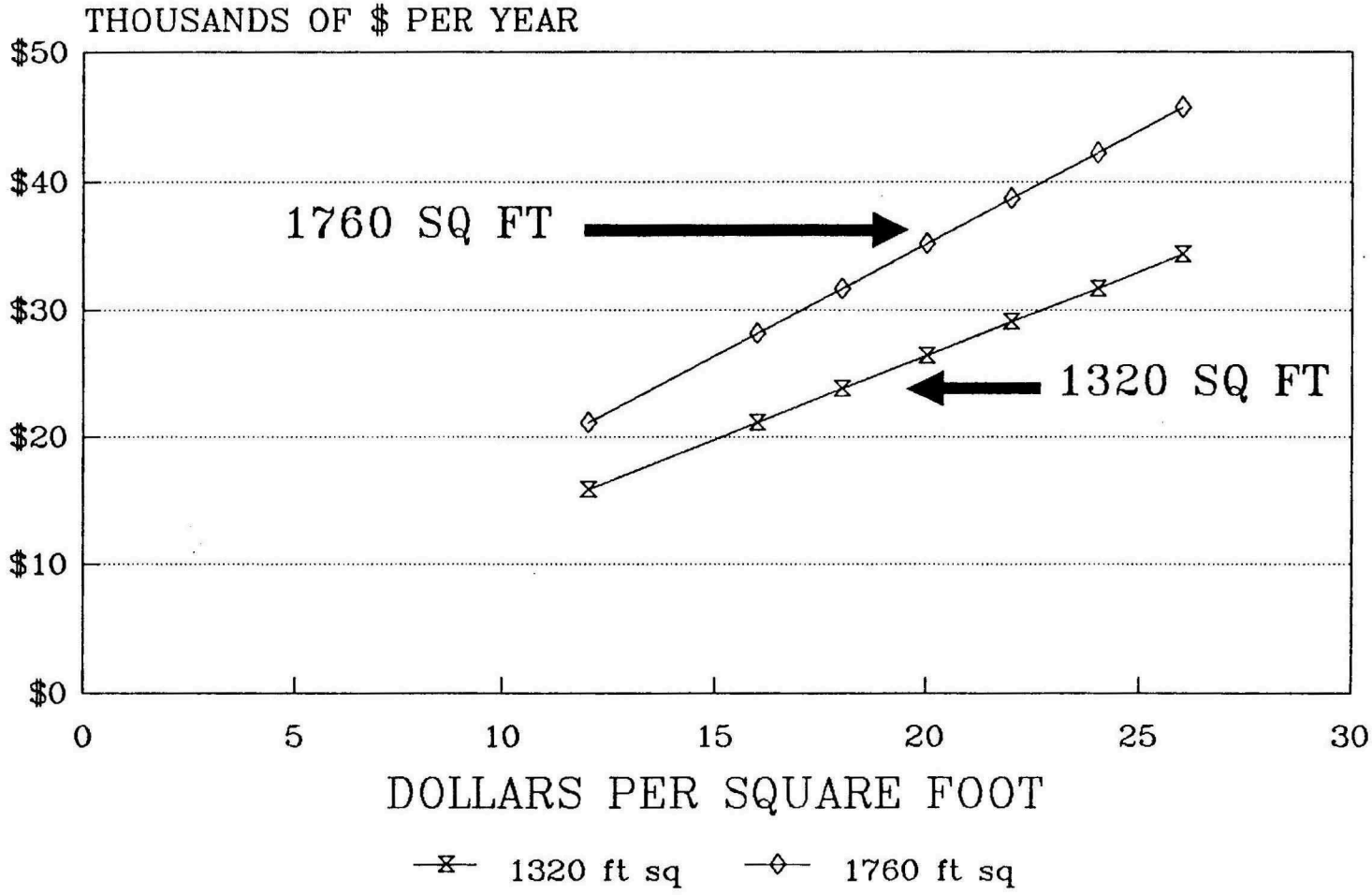
3



SPACE FOR STAFFING OF 6 PERSONS
START WITH 1 SECTY + 3 PROFESSIONALS



ANNUAL COST VS COST SQ FOOT
TWO SIZES OF AREA



usof01.cht jul 20 1988

Memo No.: 005

MEMORANDUM

DATE: July 15, 1988

TO: Bill Miles
Carl Wootten
Bob Seigel
Richard Carlin

FROM: Norm Lather

This is an interesting article that raises a number of questions for us. This includes what we should attempt to charge the fifty Japanese companies that paid $100,000 per year to MIT and Stanford for similar access to our information system.

NJL/kte

enclosure