A COMMENTARY ON EXPERIMENTAL COMMERCIAL USE

In the recent period of economic decline the chemical industry has tended to reduce basic research and increase expenditures for the development of existing products and processes.1 Government agencies are enforcing more stringent pollution regulations. Economic and political pressures require a reduction in energy expenditures. These factors combine to necessitate changes in technology. In order to implement these changes as rapidly as possible, experimental programs are sometimes initiated in commercial plants, thus bypassing the laboratory and avoiding the delay and expense of extensive test programs and facilities. Although these experimental programs are not always successful, they frequently produce unexpected results which warrant patent protection. However, such commercial scale experimentations can lead to unusual patenting problems. The following example is an actual situation.

Equipment was installed to increase the capacity of an existing chemical plant on January 10, 1975. However, the increased capacity led to a substantial increase in pollution to the atmosphere through a vent stack. In an effort to reduce the pollution, a test was designed to determine the effect of adjusting six operating conditions. The operating conditions were manipulated for the purpose of the test during commercial operation of the plant from February 6 through February 15, 1975. During this period, vent stack samples were analyzed and correlated with the operating conditions. On March 5, 1975, the data were fed to a computer for mathematical analysis to determine which specific sets of conditions reduced pollution and which did not. An equation determined from this analysis generically defined conditions for operating the chemical facility at pollution levels within the limits fixed by the Environmental Protection Agency. A patent application, filed on February 23, 1976, was directed to a method of operating the plant to reduce pollution under the generic conditions determined by computer analysis. The examples used in the application were taken from the data collected during the operation of the plant from February 6 through February 15, 1975, and the chemicals produced during the data collecting period were sold through standard commercial channels. To summarize:

February 6–15, 1975 — Commercial scale experimentation
March 5, 1975 — Generic definition of invention

Is patentability precluded by Section 102(b) of Title 35 of the United States Code? The statute provides in part: "A person shall be entitled to a patent unless — . . . (b) the invention was . . . in public use or on sale in this

country, more than one year prior to the date of the application for patent in the United States..."

The first question to be considered is whether the commercial use of the invention between February 6 and February 15, 1975 was a "public" use. A relationship between commercial use and public use was described by the Supreme Court in Electric Storage Battery Co. v. Shimadzu. In that case, an inventor sued Electric Storage Battery for the infringement of his patents on a process for the production of lead oxide powder used in the manufacture of plates for storage batteries. The defendant successfully pleaded as an affirmative defense that the patent was invalid because of public use by the defendant in this country more than two years prior to the filing of the patent applications. Accordingly, the Supreme Court held the patents invalid. In the opinion Mr. Justice Roberts stated: "the practice of a process in a factory in the usual course of producing articles for commercial purposes is a public use." This doctrine has been followed in numerous cases and extended so that the commercial sale of a product is considered a public use of the process by which the product is made even when the process has been kept secret and the product does not reveal the process. In view of this judicial interpretation of public use, it appears that the commercial use in the instant case would constitute a public use within the meaning of Section 102(b).

However, public use does not preclude patentability in all cases. An exception to the public use bar arises when the inventor can prove that the interim use of the invention was to perfect and properly test the invention. A landmark case on this exception is Elizabeth v. Pavement Co. That case concerned a long-lasting type of wooden pavement. The pavement was installed on a public toll road owned by a corporation of which the inventor was an officer and stockholder. He observed the durability of the pavement over a six-year period and then applied for a patent, which was granted. The Supreme Court upheld the validity of the patent in an infringement suit despite the public use. The Court stated:

It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, inasmuch as he thereby

---

4. At the time of this case, an inventor had two years from public use to file. In 1939 the statutory grace period was reduced to one year. Act of Aug. 5, 1939, ch. 450 §1, 53 Stat. 1212.
5. 307 U.S. at 20 (footnote omitted).
7. See Metallizing Eng'r. Co. v. Kenyon Bearing and Auto Parts Co., 153 F.2d 516 (2d Cir. 1946), cert. denied, 328 U.S. 840 (1946); Solo Cup Co. v. Paper Machinery Corp., 240 F. Supp. 126 (E.D. Wis. 1965), modified on other grounds, 359 F.2d 754 (7th Cir. 1966); Robine v. Apco, Inc., 386 F.2d 267 (2d Cir. 1967).
8. 97 U.S. 126 (1877).
preserves the monopoly to himself for a longer period than is allowed by the policy of the law; but this cannot be said with justice when the delay is occasioned by a bona fide effort to bring his invention to perfection or to ascertain whether it will answer the purpose intended.9

This broad exception to the statute carved out by the Supreme Court was limited ten years later.10 The inventor in this case developed a machine for the manufacture of arctic overshoe buckle levers. The machine was put into commercial use in the fall of 1874, but it jammed and sometimes made defective levers. These defects were corrected by minor modification in the spring of 1878. Between 1874 and 1878 approximately 50,000 gross of levers were produced and sold. An application for a patent on the machine was filed December 2, 1878. The alleged infringer claimed that the resulting patent was invalid since the machine had been in commercial use more than two years prior to the filing of the application. The inventor alleged that the commercial use of the machine was experimental in nature. Mr. Justice Matthews, in delivering the opinion of the Court, stated:

A use by the inventor, for the purpose of testing the machine, in order by experiment to devise additional means for perfecting the success of its operation is admissible; and where, as incident to such use, the product of its operation is disposed of for sale, such profit from its use does not change its character; but where the use is mainly for the purposes of trade and profit, and the experiment is merely incidental to that, the principal and not the incident must give character to the use.11

Following the above reasoning, the Court held that the alterations made in 1878 to correct defects were not vital to the invention and, therefore, the patent was invalid.

The determination of how much is "mainly" and how little is "incidental" has been the topic of great controversy and diversification in recent decisions.12 This diversity is highlighted by the antithetical decisions of the Court of Customs and Patent Appeals13 and the Court of Appeals for the District of Columbia.14

The Court of Customs and Patent Appeals found public use in a case brought on appeal from the Board of Appeals of the U.S. Patent and Trademark Office. The inventor, Blaisdell, developed a shim, a thin metal plate designed to be inserted between an engine bearing and bearing holder to compensate for wear in the bearing. In November 1934, the inventor, who was employed as a mechanic for used car dealers, installed unitary tapered shims in an auto owned by a dealer with the dealer's knowledge, but without

---

9. Id. at 137.
11. Id. at 256 (emphasis added).
charge. He kept track of the auto for about four months after installation of the shims and was satisfied that they worked properly. The dealer sold the car but did not tell the purchaser about the shims. Two other sets of shims were installed under similar circumstances. The inventor filed a patent application on the unitary tapered shim on March 24, 1936. Although the application was prosecuted to allowance, it became abandoned by failure to pay the final fee. The inventor continued his work on shims and developed a laminated shim in July of 1945 and filed a patent application directed to both unitary and laminated shims on June 24, 1946. The claims to the laminated shim were rejected because of prior art. The claims to the unitary shims were rejected because of public use. The inventor argued that the unitary shim installations were experimental in nature and not a public use. The court held that the inventor had terminated his experimentation with the installed shims and relinquished all control over them and, therefore, the shims were in public use.\(^{15}\) However, shortly thereafter, based on a similar factual situation, the Court of Appeals for the District of Columbia Circuit came to an opposite conclusion.\(^ {16}\)

In this case, the inventor invented shims and installed a set in his own auto for the purpose of experiment. After investigating their performance, he stopped using the auto. With minor exceptions the car was idle for a year, finally being sold in 1942, still containing the shims. The buyer was not told of their presence. The inventor continued to improve the design of the shims and in April, 1946, applied for a patent. The patent was denied because the Patent Office found that the shims had been in public use, and such public use was not "incidental" to experiment because after the sale the inventor did not experiment with the installed shims. The Patent Office also claimed that the public use of shims similar to appellant's device by a third party, one Blaisdell, barred the patent. The trial court found that the uses by appellant and Blaisdell were experimental in nature.\(^ {17}\) On appeal the court held that the uses were "incidental" to experiment and stated:

We believe the protective umbrella of the experimental use doctrine should include reasonable disposal of models and prototypes of the invention once their usefulness to the inventor has ended — reasonable in view of the nature of the device and the probability of discovery and appropriation of the invention by strangers.\(^ {18}\)

Although cognizant of the Court of Customs and Patent Appeals holding of public use, the court of appeals was not authoritatively bound by it. The court of appeals, holding that the fact findings of the trial court were not clearly erroneous, affirmed the lower court decision.

It is interesting to note that under either court the instant use may be classified as experimental. Applying the reasoning of the Court of Customs

---

18. 254 F.2d at 347.
and Patent Appeals, the inventor did not relinquish control over the operating variables until he had defined the generic conditions for proper operation of the plant. Applying the reasoning of the court of appeals, sale of the chemicals produced by the inventive process was a reasonable disposal (a) since the chemicals were no longer of experimental value to the inventor, (b) since there was no other reasonable way of disposing of the chemicals, and (c) since the chemicals in no way revealed the invention.

In more recent circuit court decisions, the principles employed in evaluating experimental use have become more varied. The Seventh Circuit held that "the 'public use' bar may be avoided by proof that the use was purely experimental." In this case the inventor had developed a thermoplastic injection molding compound, but he did not have an injection molding machine. In order to test the compound's suitability for use in injection molding machines and create commercial interest, the inventor made four sales of small quantities of the compound more than one year prior to the filing of a patent application. The court held the resulting patent invalid because the sales were not "purely experimental." 23

Emphasis on whether the use is purely or solely experimental is also evidenced by the rule adopted by the Ninth Circuit Court of Appeals: "A sale or an offering for sale precludes any inquiry into the experimental nature of the sale unless the contract of sale or the offering for sale contains an express or clearly implied condition that the sale or offering is made primarily for experimental use."21 This rule arose out of a case wherein the inventor obtained a patent for cutter assemblies for rock drilling. Eight years later, in an infringement suit, evidence was introduced which proved the inventor had contracted to sell and delivered the invention to a purchaser who used the invention more than one year prior to the filing of the patent application. The court did not accept the inventor's allegations of experimental intent but held that the lack of experimental use language in the contract was controlling. 22 Thus, the application of the above rule precludes any inquiry into the intent of the inventor unless experimental use is expressed in the sales contract. The rigid rules of the Seventh and Ninth circuits are in direct contrast with the balancing test of the Second and Fifth circuits.

In the Second Circuit, the experimental use exception was raised in Cali v. Eastern Airlines, Inc. 23 An employee of Pan American World Airways conceived an idea for improving jet engines. Pan American service tested the concept on commercial aircraft more than one year prior to filing a patent application. The court held that it would evaluate experimental use on the basis of whether Pan American publicly used the concept with a

---

22. Id. at 434.
23. 442 F.2d 65 (2d Cir. 1971).
predominantly commercial intent, rather than with the primary purpose of determining whether the idea should be put into general use.\footnote{24} This "balancing of intent" test has also been used by the Fifth Circuit, which stated: "When commercialization of the invention is alleged, it requires a weighing of two motives — experimentation and profit — that may co-exist, because the experimental use exception applies if the experimental motive predominates."\footnote{25}

In comparing the principles applied in the different circuits, it appears that the Fifth and Second circuits conform to the directive of the Supreme Court in Smith & Griggs Manufacturing Co.,\footnote{26} but the Sixth, Seventh and Ninth circuits have unduly limited the experimental use exception to instances where experimentation is the sole motive.

The opinion of the Fifth Circuit\footnote{27} is also noteworthy for its extensive analysis of reduction to practice as applied to experimental use. The principal issue in this case was the validity of patents for apparatus for texturizing synthetic thermoplastic yarns. (The teachings of the patents laid the technological foundation for the development of double-knit fabrics.) In 1944 and 1947, the inventors constructed and operated two successive bench models of their texturizing apparatus. In early 1951 they began conversion of a full-sized machine to the operation of their invention, completing the job early in 1952. On May 20, 1952, four representatives of Synfoam Yarns, Inc., after signing a secrecy agreement, viewed the full-sized machines in operation. The inventors and Synfoam entered into a licensing agreement for the use of the process on December 15, 1952. More than a year later, on January 4, 1954, the inventors filed applications for the patents in issue.

The Canadian counterparts of the patents in issue were attacked in the Exchequer Court of Canada by Ernst Scragg & Sons, Ltd. In order to prevail in this suit, the inventors proved a date of invention of July or August, 1947.

In a later infringement suit the district court held that the inventors were collaterally estopped from modifying the date of invention.\footnote{28} Relying heavily on the evidence presented in the Canadian court, the court held the patents invalid because the invention was on sale after reduction to practice and more than one year prior to filing the patent application.

The Fifth Circuit reversed, stating that the Canadian concept of date of invention is not synonymous with the United States concept of reduction to practice and that an inventor is entitled to a reasonable amount of time after the invention is reduced to reality to determine if the invention is fit for its intended use.\footnote{29} The court went on to say that during this period of time a

\footnotesize{24. Id. at 71.  
26. 123 U.S. at 143.  
29. 498 F.2d at 280.}
sale or public use of the invention will not bar a patent if the sale or public use is only incidental to the determination of utility. Of particular interest is the model of the inventive process which the Court developed for heuristic purposes.

Phase 1: Mental conceptualization by the inventor.
Phase 2: Embodiment of the idea in a working model.
Phase 3: Experiments with the model to show that it needs no further refinement and to prove its fitness for the intended purpose.
Phase 4: Filing application and obtaining patent.

Using this model, the Court made the following statement:

Of course there can be no public use or sale of the invention during phase two, but, strictly speaking, this is not by operation of the experimental use exception. Rather, there can be no public use or sale because there cannot be any use or sale of the invention at all, since it is not yet in existence but is merely in an incomplete stage of development. The possibility of public use or sale does not even arise until the end of phase two: before that, the invention is not yet "functional for public use purposes." 

The court also stated that there can be no public use or sale of the invention during Phase 3. This conclusion may be reached through two different approaches.

First, an invention cannot be in public use until it is reduced to practice. As a legal term of art, "reduction to practice" means not only construction of a model, but also sufficient experimentation to demonstrate that the device as it exists possesses sufficient utility to justify a patent. As expressed in another way, "conception and reduction to practice" means the conception of a completed thought expressed in such clear terms as to enable those skilled in the art to which the invention pertains to practice the process which constitutes the subject matter of the invention.

Second, although reduction to practice is equated with reducing the invention to reality, a subsequent experimental period of reasonable duration is permitted.

Under either approach, the instant facts would qualify as non-public use. First, applying the concept of reduction to practice, the inventor made test runs to obtain data to improve his process. He did not know which variables were critical or how they interacted until the computer analysis was completed and interpreted on March 5, 1975. Nor could he express his improvement in terms meaningful to those skilled in the art prior to the

30. Id. at 282.
31. Id. at 275.
32. Id. at 284.
33. Id. at 285. See also, Cali v. Eastern Airlines, Inc., 442 F.2d 65 (2d Cir. 1971).
completion of the computer analysis. By the foregoing reasoning, "the invention" did not exist until the computer analysis was completed and interpreted.

Second, even assuming that the invention was reduced to reality at the time of the commercial use, a patent is not necessarily barred because the use may yet be classified as experimental. However, it is generally recognized that any-public use shifts the burden of proof to the inventor to demonstrate experimental intent. In the instant case, the intent of the inventor was to find a method of operation to reduce pollution. The data collecting runs were intended to be experimental in the true sense of the word; that is, "an operation carried out under controlled conditions in order to discover an unknown effect." The commercial runs were under the observation and control of the inventor and there was no other practical way of determining the process improvement or of demonstrating its suitability for the intended purpose.

Of interest in analyzing the judicial interpretation of the statute is a review of the legislative intent. There are four policies regarded as relevant:

1. To avoid detrimental reliance on preapplication disclosure, thus prohibiting an inventor from seeking a patent long after sales of the invention have caused others to make, use or sell it in the belief that the invention was available to the public free of restriction.
2. To encourage prompt filing of patent applications which promote the progress of the useful arts by contributing to the pool of public knowledge.
3. To prevent an inventor from extending his period of monopoly by maintaining the invention in secret, while commercially exploiting it and, when faced with the threat of competition, applying for a patent.
4. To allow the inventor a grace period to determine if the invention is worth patenting and to fully develop his ideas.

Applying these policies to the instant situation:

1. There was no evidence of detrimental reliance on preapplication disclosure because the chemicals sold did not reveal the inventive concept.
2. The progress of the useful arts was promoted by the prompt disclosure of the completed invention.

37. WEBSTER'S SEVENTH NEW COLLEGIATE DICTIONARY 293 (1972).
3. The commercial sale of chemicals was in no way affected by the process change, thus the inventor did not commercially exploit his invention.

Consequently, the allowance of a patent in the instant case would seem to be wholly consistent with the intent of Congress in enacting Title 35 of the United States Code, Section 102(b).

The economic and technological climate which exists in the United States today is likely to create an increasing number of patentability questions similar to the one herein presented. With respect to public use, two critical factors are: when was the invention complete and what was the intent of the inventor in his use of the invention? As indicated in the preceding discussion, the resolution of these questions is often complicated by the susceptibility of the facts to different interpretations. The situation is further complicated by the courts' application of different standards in evaluating the inventor's intent. Must the intent of the inventor be solely experimental or merely predominantly experimental? The answer presently depends on which circuit is hearing the case. In view of the legislative intent and early Supreme Court decisions, it would appear that the "predominantly experimental" is the sounder doctrine.

Pamela Meitner