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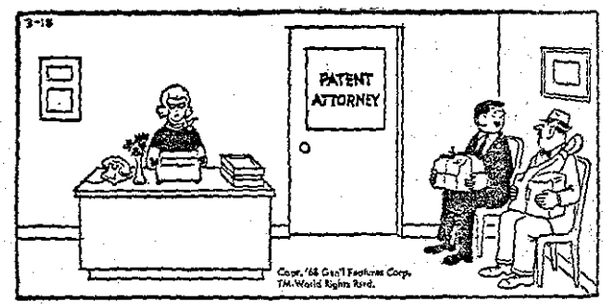
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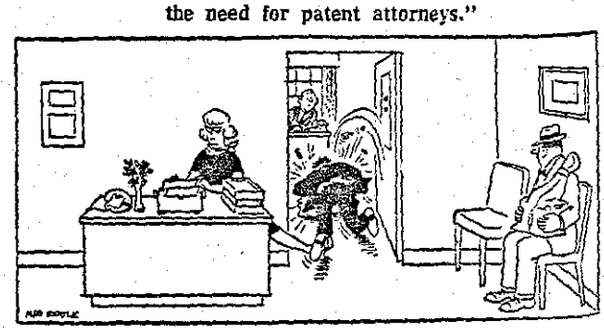
Mr. Tweedy



"Oh, I haven't invented anything. I just drop in here occasionally to have a look at you weirdos."



"Mine is a computerized device that eliminates the need for patent attorneys."



MR. TWEEDY
by Ned Riddle
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EDITORIAL

This second issue deals with a topic which is rather rarely considered in our every day professional activities and, even then, is usually limited to the heads of corporation patent departments and the few others who might be involved with problems of providing incentive to the employed inventor.

As this topic is receiving greater and greater attention in this consumer oriented society, we have gathered together articles from proponents and opponents of new systems of rewarding employed inventors.

The Editors directed a series of questions to the authors as to whether increased rewards to the employed inventor would benefit the United States. We asked: "Is a Constitutional question involved here—must an inventor be rewarded by some standard related to the merit of the invention?" Doesn't the concept of rewarding the employed inventor parallel the emphasis on benefits to the individual in the consumerism movement? Also we asked the question whether an inventor's enhanced reward might not also enhance patent validity? Couldn't it be said that a judge would be much less willing to strike down a patent if personal property rights of an individual inventor were involved?

We went to Robert J. Kuntz, who is a moving force behind the Moss Bill from California, to outline some of the basic positions from the employed inventor's standpoint. An answer is also provided by our own California Editor, Fred Hamann, who is a Patent Counsel at Rockwell International Corporation. Ted Bowes of Westinghouse and Warren Tyrrell of Bell Telephone give contrasting accounts of how their respective companies deal with employed inventors.

A horrible hypothetical example is shown in the article by James Bryce of Austin, Texas as to what can happen under an employment agreement today; some other areas of law which could be brought into play in an analysis of this question are suggested.

Then we have Professor John Stedman, who has been identified closely with this topic, asking a lot of the questions which are arising in this field.

We finally end our issue by having two distinguished foreigners,

Dr. Hans Schade of Germany and Dr. P. C. Henriquez of the Netherlands, give us their views from abroad as to their experiences, pro and con, with the German Law on employed inventors.

We are trying to accomplish in these pages of our second issue what we set out to do initially: to provide the Patent Bar with meaningful and high quality reading and perhaps a bit of humor as well—witness our cartoons. Possibly one of the more interesting aspects of the question under discussion, if you look behind the meaning of the cartoons, is the erroneous popular image of the inventor as the lone or "garret inventor". In actual fact, today's inventor is employed in roughly 80% of the cases. Perhaps there is a message here as to what is happening in the patent system today.

As we asked in our last editorial, please let us know if you like what we are doing and also if you do not. We want to do what is of interest to you and what you find valuable.

LESTER HORWITZ
MICHAEL N. MELLER

May 1973

ROBERT J. KUNTZ



Robert J. Kuntz, a Professional Engineer from Rancho Cordova in California is the moving force behind the Moss Bill providing for patent rights for employed inventors. Mr. Kuntz as President of the California Society of Professional Engineers (a member state affiliate of the National Society of Professional Engineers) has played a prominent picture in championing the cause of employed engineers particularly with respect to obtaining patent rights legislation.

Mr. Kuntz is a graduate of Purdue University with a Bachelor of Science in Mechanical Engineering and a minor in Industrial Management. He has been an Engineer with the Aerojet Liquid Rocket Company since 1955 and is presently a program supervisor in research and development. He also is a consultant in management and legislation. Mr. Kuntz has lectured and written on various topics concerning management and the engineering profession and has testified before Congress on patent rights for employed inventors. He has spearheaded a national campaign to achieve greater recognition of the professional needs of employed engineers.

THE INVENTOR'S INCENTIVE TO DISCLOSE IN THE CORPORATE ENTERPRISE SYSTEM

BY

ROBERT J. KUNTZ, P.E.

Background

> "Congress shall have power — to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." (Art. I, Sect. 8, Clause 8)

This statement appears in the Constitution of the United States and has been the basis for much controversy over the years. Did the founding fathers intend to single out creative individuals and reward them with a constitutional right? Did the orderly development of the country require the implementation of inventive talents, and were special incentives necessary to break the spell of secrecy that had befallen the crafts in The Colonies? Is the right of an inventor to his intellectual property a natural one that requires constitutional protection?

These issues have been debated extensively in recent times because of the position that the majority of inventors find themselves in today. Current corporate practice requires nearly all employed inventors to preassign all rights in their inventions to their employers as a condition of employment, and thus they derive little or no direct benefit from them. Is the right to patent a property right? Is intellectual property an individual right having intrinsic value? Does the current situation provide an environment which is conducive to disclosure as was the intent of the constitution?

The system of government in the United States holds property rights in high esteem; however, the needs of the public sometimes require a subjugation of property rights for individual rights. In the Civil Rights Movement, a conflict was shown to exist between individual rights and property rights, and in this case individual rights prevailed. Should intellectual property be considered as an individual right or a property right for trade and consumption? Should the preassignment of intellectual property to employers be permitted?

The rights of inventors versus the rights of the employers may not be resolved to the complete satisfaction of either party. However, both will agree that the right to patent, as described in the Con-

stitution, has two basic purposes—(a) to provide the *incentive for inventors to disclose* their ideas, and (b) so that the fruits of their intellectual genius may be made known *for the good of the public.* It is thus possible to debate the merits of the current corporate practice of preassignment agreements on a pragmatic basis without concern for natural rights. Would the public's interest be better served if more attention were given to the incentives to employed inventors to disclose in the corporate enterprise system?

The Patent And Its Purpose

A patent is an anomaly in the free enterprise system. It is a *monopoly* granted *by the government.* This monopoly is granted to the inventor and allows him to prevent others from making, selling or practicing his invention without his permission. The World Book Encyclopedia (1965, pg. 171) defines a patent as:

> "An official paper issued by a national government to indicate ownership of property. The term, Letters Patent, or simply, patent refers to the right to control the manufacture and sale of the product. This monopoly, limited in time and type, is given to the inventor of a device or a process, to reward him for his genius."

In the early Colonies, craftsmen were known to keep their processes a secret to protect their business interests. This secrecy was not considered to be conducive to the building of a strong and advancing economy. The United States passed its first patent laws in 1790.

In the early days, the Patent Office would not grant a patent unless the invention was what a latter-day Supreme Court decision called a "flash of inventive genius".[1]

If this principle were followed today, many patents that were the results of painstaking development efforts over a long period of time (such as Xerox) would not have been patentable, while an idea suddenly conceived by an individual having no specific capability in the field would be granted a patent. Because of this, the patent system has been the subject of wide-spread criticism over a long period of time.

In 1952, Congress adopted a new patent code which permitted even the new use of an old device to be patented. Presently, for an inven-

[1]In 1941, the Supreme Court handed down an opinion which said that an invention to be patentable had to be the result of a flash of creative genius," *Cuno Eng. Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941).

tion to be patented it must be *new, useful,* and *non-obvious to one skilled in the art.*[2]

Problems with the patent system have been experienced for many years. In the Middle Ages in England, only the king had the power to grant "letters patents". Frequently the king misused this power to aid his friends even to the detriment of others. The system was so unfair that in 1624 it was abolished, and England today treats patents as monopolies.

In December 1956, a Congressional study made the following salient points on the U.S. Patent System[3]:

> "Those who build the governmental structure under which we live were exceedingly wise, and they were particularly so when they created a strong patent system based on the Constitution. It has three great objectives:
>
> First, it aims to stimulate both invention and assiduous search for new applications of knowledge, which is the basis of invention. It does this by placing the inventor in a position to secure a reward.
>
> Second, it seeks to create conditions whereby the venture of funds to finance a hazardous introduction into public use of new devices or processes will be warranted. This is done by protecting the industrial pioneer for a limited time against the uncontrolled competition of those who have not taken the initial financial risk.
>
> Third, it aims to prevent the creation of an industry permeated by the intense secrecy with regard to its processes which characterized the Medieval guilds and which can only retard the realization by the public of the benefits of scientific progress. This it does by extending the temporary monopoly to those who, in keeping with the American ideal of openness and frankness, will make a full disclosure of their new ideas so that they may be utilized to the fullest by those skilled in a particular art."

Several presidents of the United States have also made pronouncements on the United States patent system. President Lincoln said,

[2] 35 U.S.C. 101-103.
[3] "Proposals for Improving the Patent System" by the Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary, U.S. Senate, Eighty-Fourth Congress (December 1956).

"The patent system added the fuel of interest to the fire of genius." President John F. Kennedy said, "The government has the responsibility to foster the fullest exploitation of inventions for the public benefit." Finally, President Lyndon B. Johnson said, "We can expect that the stimulus of the U.S. Patent System will continue to produce products and processes that will create jobs, improve the health and well-being of our people, and contribute to the social and economic gains not only of the U.S., but the whole world."[4]

The patent system thus has several purposes and objectives: (a) it must stimulate the disclosure of inventions through a system of rewards; (b) it must create an atmosphere in the industrial enterprise system which will stimulate the flow of venture capital to permit the "innovator" to bring the invention to the market place; (c) it must provide a series of statutes which can protect the interests of all parties; and (d) finally the overriding issue is the benefit to the public by creating a system of free disclosure of new materials, processes, machines, or any improvement thereof.

The patent system thus requires the cooperation of three independent parties: the inventor, the innovator and the government. The inventor must disclose his ideas and document them in such a way that others can fully understand them. The innovator provides the means for developing and bringing the invention to the market place so that the public can derive the benefits in terms of advances in the social system. Thirdly, the government provides the means for protecting the rights of the inventor and innovator (employer).

Some have attacked the patent system because of its monopolistic nature. This premise was examined in *United States of America v. Dubilier Condenser Corporation, 289 U.S. 178 (1933)* where the court stated:

> "The term monopoly connotes the giving of an exclusive privilege for buying, selling, working or using a thing which the public freely enjoyed prior to the grant. Thus a monopoly takes something from the people. An inventor deprives the public of nothing which it enjoyed before his discovery, but gives something of value to the community by adding to the sum of human knowledge."

The basic purpose of the patent system was illuminated in *United States v. Bell Telephone Co., 167 U.S. 224, 239*:

[4]"Patents: Spur to American Progress" (A Simplified Explanation of How the Patent Incentive Fuels Economic Growth) Superintendent of Documents, U.S. Gov. Printing Office, Washington, D.C. (1965)

> "He may keep his invention secret and reap its fruits indefinitely. In consideration of its disclosure and consequent benefit to the community, the patent is granted."

Difficulties in protecting and enforcing patents have caused some industrialists to turn to the old system of "trade secrets" to protect their economic interests. The definition of a trade secret is found in the *Restatement of the Law of Torts*[5]:

> "A trade secret may consist of any formula, pattern, device, or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it."

A possibility exists that patentable disclosures can be included in the general definition of a trade secret. Previously, an industry or craft desiring to use trade secrets as a means for protecting their "intellectual property" did so at their own risk. Protection from the law came from full disclosure (patent system); but now there are state laws that protect trade secrets as well.[6] One party can prevent another from practicing a trade secret of the first party, if the first one can prove that the second learned of the secret through industrial espionage or had obtained the services of an employee from the first who has knowledge of the secret. Supporters of the patent system have challenged this trend and raised the question, "why should the government provide protection for those who would subvert the intent of the patent system through the use of trade secrets which are patentable devices and processes?".

The Employed Inventor

Patent assignment data indicates that about eighty percent of all patents are in the names of inventors who are employed by others. Another interesting fact is that less than one percent of the labor force is responsible for about one-half of all patents, and that engineers are forty times more likely to obtain patents than all other occupational groups combined.

Since such a high percentage of the patents issued are the results of activities by engineers, it is important to note that nearly all of these individuals are required to preassign their patent rights to their employers as a condition of employment, and they derive little or no direct benefit from their patents. Most employers state

[5]Published by the American Law Institute, Vol. 4 (1939), Chapt. 36, Sect. 757(b)

[6]See for instance those of New York, enacted in July of 1964 and Pennsylvania in Oct. of 1965.

that their engineers are "hired to invent". Though it is true that some engineers and scientists are specifically hired to invent and are paid high salaries, given elaborate laboratory facilities in which to function, and are recognized with bonuses and awards for their genius, most inventions do not emanate from this group. Engineers are usually hired to carry out specific tasks which include research, development, marketing, production, sales, etc. and most inventions are ancillary to the job. In the employment situation, two engineers, given the same assignment with the same program goals and objectives can behave in different ways. One engineer will solve the problem *adequately* with known technology; and the other will find a *better solution* for the problem through his creative talent—and *an invention is born*. In both cases, the individuals were not "hired to invent" and were receiving the same remuneration for their activities.

Some studies have been conducted to determine the psychological make-up of the "inventor". These investigations have shown the inventor may have behavioral characteristics that do not outfit him for managing other people, and thus he may not fit the model of an ideal employee. He may be somewhat self-centered, not particularly aggressive, a nonconformist, and can occasionally be found to ignore "company standard operating procedures" to accomplish his goals and complete his assignments. The inventive person *does* possess some rather unique talents. He has the ability to observe seemingly unrelated facts over a period of time and store them in his "bag of tricks". Later, when confronted with a problem that requires a better solution than present state-of-the-art, he has the unique ability to draw from his "bag of tricks" and provide the pieces for a new creation. Finally, it can be said that the creative individual, when confronted with the challenge, will invent. However, once an invention occurs, is there incentive for disclosure?

Under the U.S. Patent Law, a patent must be issued in the name of the inventor, and this fact is pointed to by employers as an incentive to disclose. The employed inventor who has signed a preassignment agreement, will still have his name on the patent. Proposals have been offered to eliminate this requirement and supplant it with the method used in Europe which allows a patent to be issued in the name of the owner. Many believe that this change would be a further subjugation of the interest of the inventor and therefore should be strongly opposed.

The Preassignment Agreement

Many studies have been made to illuminate the nature of the preassignment agreements executed by employed inventors. The results of these surveys are varied, but some generalities can be stated. The preassignment agreements, treated as contracts, cover the period of employment and normally extend to six months after termination. They are unilateral, delineate no specific reward for disclosure, and often times include inventions made by the individual, on his own, independent of his employment environment and in subject areas not related to the employer's business.

The American Bar Association, Section on Patent, Trademark and Copyright Law, considered the position that employed inventors are put in by the preassignment agreements in the late 1960's. Though no revolutionary change to the current practice was approved by the committee, a minority report raised some interesting thoughts:[7]

> "The exclusive rights granted by a patent have the distinct attributes of personal property under 35 USC 261, while the concept of a salary for the services of an employee involves distinctly different considerations of a psycho-economic-legal nature. The compensation for the exclusive rights granted by a patent may well extend over the life of the patent and into an entirely different economic period from that of employment. This distinction is recognized under the Federal tax laws in that salary is subject to treatment as ordinary income while the compensation for the transfer of patent rights may be accorded more favorable capital gains treatment under the provisions of the Internal Revenue Code. It has been urged that an employment agreement which would strip an employee of future inventions without compensations for the exclusive rights transferred in the inventions in addition to regular salary should not be enforcible. It has been further pointed out that many of these invention-stripping agreements are so drawn as to reserve to the employer the power to dismiss the employee for any reason or no reason, while specifically obligating the employee to assign to the employer the exclusive rights in future inventions of the employee not only during the period of employment but after termination as well."

In a study done for the Eighty-Seventh Congress, Sub-Committee on Patents, Trademarks, and Copyrights, of the Committee on the

[7]1970 Committee Reports of the Section of Patent, Trademark and Copyright Law of the American Bar Association, p. 65.

Judiciary, the merits of common corporate practice were questioned in conjunction with the position experienced by employed inventors in Europe:

> "The corporations themselves, in pressing for the policy of the government, leaving with the research contractor the patents that stem from government-financed research, vigorously contend that money compensation alone is not sufficient to bring forth the best efforts of the researchers and that they (the corporation) should receive patent rewards as well. Assuming without conceding, that this be true in the case of government research contracts, corporations have not made it clear why it should be any less true in the case of their own employe contracts."

Incentives To Employed Inventors

The incentives granted to employed inventors vary from $1 granted at the time of patent application to cash awards for accepted disclosures, and subsequent patents issued. Some employers grant the employed inventor a "piece of the action" by giving him a percentage of royalties derived from licensing others to practice the patent. Some firms give awards to their employees, but give no consideration to their ex-employees who have terminated on their own volition. In the latter case, one employer stated that, "an award is given as an incentive to disclose, and there is no need to provide incentives to ex-employees."

Some industrialists have argued that it is unfair to grant special recognition to inventors when there are others in their firms who also apply creative talent for the good of the enterprise and who do not receive special awards and recognition. Concern has been expressed that if employed inventors are granted special recognition, an air of uncooperativeness will develop among the "technical team". In a letter to the editor of Chemical and Engineering News,[8] Dr. George H. Hitchings, Vice President, Burroughs Welcome and Company, said:

> ". . . industry has tried all sorts of formulas for patent pools, in which royalties were set aside for the benefits of the inventors —all of those (incentives) proposed now and many more besides. The downfall with such schemes has been the internal dissentions they create. It is often difficult enough to adjudicate the authorship of scientific papers where a spectrum of greater and lesser contributions by a number of individuals is involved."

[8]Chemical and Engineering News, June 15, 1970, p. 6.

The possibility of creating possessiveness in intellectual property when incentives are given to individuals for their disclosures, may be a consideration. However, the free enterprise system has thrived on competition as a technique for increasing creativity and productivity. Members of sales staffs are granted incentives through commissions and bonuses. Members of the managerial staff receive bonuses which are related to their "productivity". In production facilities, some individuals work for "piece rates" or are granted incentive bonuses associated with productivity. Both individual and group incentives have proven to be successful in stimulating extra performance and are identified in text books on modern industrial psychology. Additional incentives to inventors will produce increased disclosure.

Employers say that employed inventors have adequate incentive through potential promotion and salary adjustment. However, advancement and recognition are not always automatic for the creative individual. Advancement (promotion) usually infers an increase in supervisory responsibilities. However, as previously mentioned, the inventor may not necessarily possess the managerial skills required to assume a supervisory position. Salary increases are often coupled to standing industrial relations policies that neglect to relate the true value of inventiveness to the goals and objectives of the enterprise. Finally, patent incentive awards rarely are based upon the worth of the invention.

In a study conducted by Albert S. Davis, Jr.,[9] the following was reported:

> "When the Patents, Trademark and Copyright Foundation questioned a carefully selected sample of productive corporate-employed inventors in 1962 to learn whether they would be stimulated to produce more inventions, by far the largest proportion of those replying said they could, and that cash payments, bonuses, and royalties on a percentage basis were the way to do it."

Many employed inventors have been sufficiently unstimulated by current corporate and government practices that they have developed "idea files" in which they store potentially patentable ideas. Many of these individuals feel that these files are like money in the bank that they can draw on when their current employment situation is terminated. Unfortunately, the majority of these ideas never

[9]Albert S. Davis, Jr., "A Piece of the Action", International Science and Technology, p. 50 (December 1963).

reach the light of day, and potentially valuable inventions are denied the employer and the public.

Admiral Rickover addressed the Sub-Committee on Patents, Trademarks and Copyrights in the 87th Congress and tied employed inventors' incentives to the intent of the Constitution:

> ". . . one of the two major problems facing the patent system is how to increase incentives for employed inventors who get no benefit whatever out of the patent system as it has evolved. We might well consider whether we ought not to go back to the original intent of the Constitution and devise some reward for inventors whether they are government or industry employees."

Would increased incentives cause an increase in disclosures? Yes, and this can be seen from a brief survey of the experience at the University of California. Prior to July 1963, the University did not require preassignment of patents, but there was a small percentage of the royalties given for inventions disclosed. A change was instituted which resulted in a five-fold increase in disclosure rate. As reported in December 1967 by the Patent Department of the University:

> "Under the new policy, the assignment of inventions is mandatory on request and the inventor receives one-half of the net royalties.
>
> This change has had a dramatic impact on the number of inventions voluntarily disclosed by University staff and faculty.
>
> These figures, we believe, demonstrate the value of a policy with a built-in incentive to the inventor.

1961	48
1962	35
1963 (first half)	28 old policy
1963 (second half)	93 new policy
1964	188
1965	187
1966	220
1967	187 as of Dec. 12, 1967"

This type of data is difficult to find, since the trend in the country is toward more restrictive policies rather than more liberal.

Labor-based unions have not been effective in representing the

needs of professional employees, and correspondingly professional employees have not, to any significant degree, used these organizations to solve their professional problems. However, unions have recognized the need for change in granting greater rights and incentives to employed inventors. In April 1962, the industrial union department of the AFL-CIO stated:

> "Like salaries, patents are a matter for collective bargaining where unions are concerned. But unlike salaries, patents affect only a relatively few employees. They are, in other words, hardly a striking issue. Progress will be slow even when a more militant spirit exists." — "Someday, perhaps, we shall have enough engineers organized so that we can exert real pressure in the area of patents."

In 1963 Congressman George Brown (D) California, introduced a bill in Congress (HR4932) to make the preassignment agreement an unfair labor practice at the urging of several engineering unions. The bill was referred to the Education and Labor Committee and was never heard.

A suggestion was offered to employed inventors to sustain their interests by Dr. George H. Hitchings[10] in his letter to the editor of Chemical and Engineering News, in which he stated:

> "In the end, the inventor's security and rewards hinge on the fact that he himself is a marketable commodity. If he is truly a creative individual, and should his own company fail to reward him properly (with salary increases, promotions, and bonuses as appropriate), he will not have to search far to find another company that will."

Thus a leader in the industrial enterprise system suggests that the employed inventor could use "mobility" as a means of obtaining recognition and reward for his creativity. Presently, this suggested method is widely used; but how frequently would a non-aggressive introvert inventor "pull up stakes" and enter a field of self-salesmanship to reap the rewards of his creative genius? Therefore, an equitable incentive system under the law should satisfy the interests of the inventor and his employer without the need for "job turnover" and the resultant loss to both.

An inventor summed up the essence of the incentive system. In a statement reported in The Journal of the Patent, Trademark and

[10]ibid, supra n. 8.

Copyright Research Institute of George Washington University, Volume 7, Conference Number at p. 179, Richard R. Walton stated:

> "I wish to state categorically that there is no great and successful industrial innovation that has not been accompanied by a very strong profit motive. The inventor is pushed from behind by the specter of want and failure, but he is pulled forward by the opportunity of large gains if successful. Actually, in speaking of motive, probably the nicest of them all is the profit motive."

The essence of this statement is the profit motive. In the current industrial enterprise system, where are the "large gains" for the employed inventor?

Impact of Government Sponsored Programs

Since almost fifty percent of all research and development (a major source of invention), is sponsored by the Federal Government, an examination of the incentives contained in government contracts is warranted. In this case, the interests of the contractors vary according to the contracting agency providing the funding. Unfortunately, the inventor isn't mentioned, and the relationship is between the government and contractor.

Some agencies, such as the Atomic Energy Commission, the National Aeronautics and Space Agency, the Federal Aviation Administration, the Department of Agriculture, and the Department of Interior generally take title to all inventions and royalty-free licenses under all background patents upon which they depend. This applies for all inventions first conceived or reduced to practice under the contract or the results of significant research and development efforts under a contract that led to the discovery. Other agencies of the government, such as the Department of Defense, will allow the contractor to retain title, but the government has a royalty-free license to use the patent for government related purposes. Thus, the contractor must "preassign" all rights to invention or at least license for use by the government as a condition of accepting government funded research and development. Some government agencies require an employer to obtain patent preassignment from potential inventors even though the employer may not practice this policy himself. Because of the lack of incentive to disclose, some of the ideas and findings are retained for contractor's use. But more often, the inventions are lost through the lack of documentation and are only used to solve the particular problem at hand — never to be applied to another problem at another time through full disclosure.

The U.S. Economy

A review of the number of patents filed in the United States compared to other countries indicates that the U.S. has fallen to sixth in the world in terms of patents of origin per capita. Can the lack of incentive for disclosure be related to the poor showing of the U.S.? This question was raised pointedly in an article appearing in Lawscope, November 1965:

> "The Standard Employment Contract for professional engineers, scientists and researchers in this country — with its inevitable clause requiring assignment of any new discovery to the employer — is charged with a harmful side effect, which may lead to corrective legislation. The opponents of the industrial and government habit of requiring inventor-employees to surrender their patent rights are pointing with alarm to the ominous decline in the number of patents filed for new processes. This drop is being attributed to the lack of incentive now that inventors no longer own their inventions."

No longer can the United States languish in the knowledge that it is number one in the export of technology. In 1971, the U.S. deficit of payments of five billion dollars exceeded all previous in the history of the country. Foreign competition has taken over much of the market that used to be the purview of the U.S., and many of the products that used to be the hallmark of American industry are now produced in foreign countries. Increasing cost of labor and reduced productivity in the U.S. have a major effect on the production of products and the deficit of payments. However, innovative creativity must also be considered. A comparison of the number of patents of origin of the United States to some of its major competitors in the world market indicates that West Germany and Japan rank high on the list, while the United States and Great Britain rank lowest. It is interesting to note that the U.S. and Great Britain have no statutes protecting rights and guaranteeing incentives to employed inventors, and West Germany and Japan do.

One of the key barometers for estimating the health of the U.S. economy is the Gross National Product. It can be said that the GNP, which reflects the flow of goods and services in the economy, is significantly influenced by three types of activity — subsistence (food, clothing, etc.), new products, and planned obsolescence. In each of these, invention and innovation are major factors. Possibly, the founding fathers were very perceptive in placing such importance on inventions by granting the right to patents as part of the Constitution.

Recommended Actions

In January 1970, Congressman John E. Moss (D) California, introduced a bill in the House of Representatives (HR 15512) to give protection to the non-independent or employed inventor. The Moss bill was modeled after the West German Law for Employee Invention Rights which became law in 1957. An inquiry was made by the California Society of Professional Engineers to determine the reaction of an association of German engineers. Verein Deutscher Ingenieure, to the law.[11] They stated:

> "According to the documented experience, the Law for Employee Invention Rights, of July 25, 1957, was well accepted by employees. Also, we are of the opinion that this law of the Federal Republic of Germany is one of the most modern regulations to be found in the world, as it equalizes in a responsible manner the divergent interests between the labor rights and the corporation rights.

The California Society of Professional Engineers, for almost five years preceding the bill's introduction, had conducted investigations into the problems of employed inventors. The bill is a comprehensive approach to the problem which recognizes both the rights of the inventor and the innovator. It differentiates between an invention made in the course of employment and inventions that are the result of individual efforts external to the job environment and not related to the employer's business. To insure that disclosures reach the light of day (the Constitutional purpose), it establishes specific periods of time for actions by the inventor and innovator. The thrust of this bill is to provide protection of the inventor's interest so as to increase the incentive for the inventor to disclose. The increased disclosure will certainly benefit the public with more patented inventions, and the employers can't help but benefit in the sale of these inventions, the sale of the products, and the royalties derived from licensing others to practice these inventions.

The Moss bill has been reintroduced in January 1973 into the 93rd

[11]The V.D.I. is one of the most distinguished German professional associations in West Germany according to the West German Consulate in Washington, D. C. The organization was founded in 1856, and newly founded in 1946 after the conclusion of the Second World War. They have more than 30,000 members.

Congress as HR 2370[12] modified from previous versions to remove some of the objectionable parts which were of concern to corporate interests. The most significant change was the removal of the provisions for "proposals for technical improvements."

This legislation has been well accepted by inventors, but some representatives of industry have stated that it is an unnecessary governmental intrusion into the relationship between employees and employers. The precedent for governmental action in areas affecting the interest of the public is well established and include actions of the Pure Food and Drug Administration, the Department of Agriculture, the National Labor Relations Board, and many others.

If the patent system, as originally conceived by the founders of the Constitution, is to achieve its objective, certain changes are necessary. Inventors in the U.S. should express themselves together through effective organization so that they truly become an entity to effect change. The U.S. political system is highly structured, and without collective representation there is no voice. On a recent visit (November, 1972) to the U.S., Mr. Harald Romanus, Consultant for the Swedish Board for Technical Development and President of the International Federation of Inventors Association, stated to the author that he could find no single organization in the United States that effectively represents inventors. Groups currently representing professional engineers should assume the responsibility for recognizing the interests of inventors, and professional associations of patent attorneys should examine their positions in light of the Constitutional intent.

Guidelines for employed-inventor contracts which recognize adequate incentives should be fostered by employee organizations.

[12]The Moss Bill (H.R. 2370), submitted on January 18, 1973, intends to create a federal system for compensation to be paid for inventions made by employed persons which has grown out of the type of work performed or the experiences gained during the period of employment. The compensation will "represent the fair market value of employer's exclusive right to the invention adjusted to reflect the following factors (1) the position and duties of the employee, and (2) the degree to which the operations of the employer contributed to the making of the invention." If agreement between the employer and employee cannot be reached the matter can be referred to a Mediation Board in the Patent Office.

Further provisions of the bill include:

(a) The duty of the employer to notify the employer of the existence of an invention.

(b) The right of the employer to refuse to claim rights to the invention and to retain the right of first refusal to acquire a license to practice the invention.

(c) Procedures are set forth for the filing of the patent application, the preservation of rights for foreign filings and the abandonment of the application.

(d) Where a patentable invention is kept as a trade secret the employee would receive additional compensation for the fact that no protective right was secured.

(e) The provisions of the bill cannot be altered by any agreement if it is to the detriment of the employee.

The innovator should examine his incentive systems as they apply to the recognition of creative talent. If the employer is truly interested in increasing disclosure, then he should grant incentive rewards that relate to the value of the disclosure to the company. The inventor should be provided the assistance to prepare appropriate documentation. He should be given the opportunity to work closely with the patent department of the company and given continuous feedback as to the status of the patent process. If the employer has no interest in the invention, he should release it to the inventor so that he can proceed on his own. This positive attitude will provide a further incentive for the employee to disclose in the future. The reward system should be designed in such a way that the inventor is given a "piece of the action".

In the philosophy of the patent system as established in the Constitution, new and innovative ideas should be disclosed, and protection through trade secrets should be reserved for non-patentable devices and processes.

The government should take specific actions to strengthen the patent system. The procurement procedures used to obtain government sponsored research and development should be modified to provide recognition and compensation to employed inventors to stimulate disclosure. Legislation which guarantees incentives to employed inventors, such as the Moss Bill, should be passed.

There should be a Legislative investigation to examine the whole subject of trade secrets and their effect upon the disclosure of inventions. If it is found that industry's use of this technique to protect patentable inventions is detrimental to the interest of the public, then legislative action should be initiated to remove protection under the law for patentable trade secrets.

Summation

The free enterprise system is critically dependent upon the disclosure and free exchange of information so as to provide a continuous flow of new products, processes, and materials to the market place. The patent system was established to stimulate this flow. There has been extreme public apathy toward the patent system, and in some cases direct antagonism. In a speech before the Association of Corporate Patent Counsel on January 19, 1971, Mr. Abe Fortas, former Justice of the United States Supreme Court stated[13]:

> "We are today experiencing in this nation a sort of People's Revolution. People are demanding that the policies of what is

> referred to as the Establishment — the practices and policies of our great corporations — should reflect a large infusion of what is considered to be the public interest." (p. 819)

He further stated:

> "Unless we can fashion a patent system in which genuine invention and the public disclosure of invention are fostered and promoted, and the appropriate exploitation of invention is protected, we will garner not the fruits of competition, but the chaos of guerilla warfare and the stagnation of a closed and secret industrial society." (p. 812)

The stimulation of increased disclosure, and the institution of a patent system that ensures that creative ideas will see the light of day, will assist in carrying out the Constitutional intent of the patent system — and all will benefit.

[13]A. Fortas, "The Patent System in Distress, 53 J.P.O.S 810 (1971).

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Fred Hamann has been active in both the ABA and the APLA for a number of years and he is our California Editor. When it fell to him to try to find someone to counter Robert Kuntz' views on the topic of this issue, he volunteered himself and here follows his thoughtful analysis of the problem from the corporate standpoint.

INVENTION IN THE CORPORATE ENVIRONMENT

BY

H. FREDRICK HAMANN*

I

Introduction

Much has been written concerning the employed inventor and the allocation or assignment of rights to inventions made while so employed. It is not the purpose of this paper to again review that legal relationship or the historical development, but rather to consider them in the light of how they are operating in today's environment of large corporate research organizations. While I think the existing allocation of rights to be proper and equitable in every respect, many who are not familiar with the operation of the patent system in a large corporate environment have raised the spectre that the increasing number of patents being issued to the employed inventor compared to the independent inventor is in some manner contrary to the purpose of the patent system, and that the employed inventor should not be required to assign his invention to his employer.

I have attempted in the following paragraphs to outline some of the factors and considerations which I think have been overlooked or at least not properly emphasized in the analysis of the employed inventor relationship. Moreover I believe the analysis will show that the increasing number of inventions arising out of large corporate laboratories is at least in part a natural development of technology and should be fostered rather than questioned. More particularly the corporate view of patents, their functions and their desirability for corporate purposes is outlined together with comments on their relationship to the independent and government inventor's use of the patent system and the effect of those policies on the corporate inventor.

Before discussing the corporate-employee inventor and his relationship to the patent system in operation, there are several differences in the applicability of the patent system as it operates for the individual and government patent owner compared to the corporate invention owner which must be exposed to insure an understanding of problems peculiar to the corporate employee inventor.

*The views expressed herein are the personal views of the author and do not necessarily reflect the policies, procedures or opinions of Rockwell International Corporation.

II
Patent System Operational Differences

Basically the patent system can be looked upon as a means for encouraging the allocation of resources to the innovation process to obtain disclosure of new and improved products and advances in knowledge for the general benefit of the public. Looked at in this light, it will become apparent from the following discussion that the decisional basis for making the allocation of resources for inventive activity is significantly different as between the independent inventor, the corporate inventor, and the government employed inventor.

A. Government Employed Inventor

The government encourages the development of technologies on a general basis. A technology is identified for development because it has been determined that the end result obtainable through that technology is a desirable public goal. Thus atomic energy was determined to be in the general public interest. The development of this technology was a matter requiring an immense allocation of resources, which in all probability could not have been accomplished by corporations alone on any reasonable time scale, and was clearly beyond the capability of an individual inventor to develop into useful form without massive financial and technical support.

Space exploration under the NASA programs represents another example of a commitment of resources to develop a technology without commercial market consideration. Thus in the technologies associated with the federal government, resources are allocated toward a non-market goal set by the government and considered to be in the general public interest.

In these cases the government may be considered to have defined a potential future commercial market. However, the exclusivity of the patent is less significant in obtaining resource allocation primarily because the immediate market is almost wholly controlled by the government. Moreover, such allocation is unaffected by the presence or absence of patents since the market is expressly insulated by the authorization and consent statutes resulting in compulsory licensing for governmental uses.

B. Independent Inventor

In contrast to the government identification of areas of future inventive importance, the independent inventor is required by the

realities of the market to identify a problem which if solved will meet with success in the market place. The problem is generally one in a technology in which he has an expertise or in a closely related technology. Rarely does the independent inventor generate an invention which develops into a new technology. The independent inventor must be able by virtue of the force of the invention, the scope of the patent, and superior salesmanship to convince others to allocate resources for the development and incorporation of his invention into a product for marketing. There is rarely a ready made market as in the government arena.

In these circumstances the exclusivity of the patent is important in providing the protection against competition, at least until such time as a market position is established and the investment repaid. Without an understanding judiciary which generously reviews the validity and scope of the patent, obtaining the allocation of resources required to develop and market the invention becomes more difficult because there is less protection for the investment required to reach the market.

C. Corporate Inventor

The corporate inventor in a large research oriented company lies somewhere between these two ends of the resource allocation spectrum. Most of the problems requiring an inventive solution in a corporation are directly related to the products or product lines of the corporation and therefore are less likely to foster a pioneering patent. More likely the corporate inventor is presented with a problem looking toward greater public or customer acceptance of an existing product based upon enhanced product capability or lower price rather than the generation of a wholly new product. The corporation usually allocates resources without concern for patent protection. Patents are in most cases a by-product of research and development and not a goal of themselves. The corporation has an established market position in its product lines which offers a measure of protection for the continuing investment of research and development money from which the patentable inventions arise.

III

The Corporate Environment

With this general overview of the different considerations as between government inventors, independent inventors, and particularly corporation inventors, a more detailed look at the factors which a corporation may utilize in evaluating its patent filing and

enforcement policy will be outlined. Corporation patent policy involves significantly different motivations than either the individual inventors or the government employee inventions. The factors which could, and in many cases do, influence the corporate policy may not be of interest to the other two categories of patent owners.

In the corporate environment the employer provides the employee inventors the atmosphere, background information, direction and resources in terms of space, heat, light, equipment, time, supporting services, salary and in many cases the identification of the problem to be solved. In addition, it provides an atmosphere in which technical expertise of employees from different as well as related fields may be obtained without fear that the invention may be stolen. Such cross-fertilization is a significant factor in the inventive process. In return the employed inventor assigns his inventions made during the performance of his work which includes the right to make the decision as to the applicability and commercial significance of the invention. Any such decision is bounded by two general concerns.

A. Corporate Market Posture

First, the corporation has a market posture as represented by the size and character of the sales and service force, or the absence of one, together with a product line and long range plan for future product introduction. This market posture defines the areas where the corporation plans to compete, the identity of its competitors, at least in general terms, and generally defines the boundaries within which the corporation will need or be able to use patents to a business advantage. It is this market posture which aids in defining the amount and kind of resources allocated and which helps to identify the types of problems presented to the corporate inventor for solution. It also defines the type of inventions which will be worthy of being patented by a corporation.

The inventor employed in a corporation is given the tools to define solutions to specific types of problems and is therefore by definition restricted in the scope of his activity. To take an obvious example, a corporation interested in advancing the general art of semiconducting devices may not have the equipment, the direction and the other resources necessary to advance the state of the art in a totally unrelated technology like organic chemistry. However, this is no more restrictive than the independent inventor's environment. The independent inventor cannot have all the tools, knowledge, and facilities available to work in any technology. Clearly there is a natural limitation based upon the educational and experience background of the independent inventor. There is a further restriction

based upon his ability to identify problems in his particular technology. Admittedly the independent inventor may be freer to apply his resources to new fields uninhibited by a market posture. However, he is more restricted by his technical posture than a corporation, since the corporation can hire talent in a new field in considerably less time than it would take the individual inventor to reschool himself or expand his present knowledge into technical areas unrelated to his basic training.

This same limitation is applicable to the independent inventor. After the decision to seek patent protection is made, modern marketing approaches impose a significant impediment to the use of an invention in a product and the marketing of that product. Without an existing market posture, the independent inventor is required to rely to a much larger extent upon the scope and the validity of the patent in order to establish a market posture for a time sufficiently long to obtain some reasonable return upon the investment made. With the courts' hostility to patents, the chances of obtaining such a return are reduced.

B. Technology Complexity

The second general consideration is the state of the art of the technology in which some improvement is to be sought. The resources required to advance the state of many modern technologies are beyond the financial and technical capability of the usual independent inventor. For example, advances in the electronic circuitry and semiconductor device areas are still possible with relatively little capital investment. However, the level of sophistication in many other technical areas does not allow the usual independent inventor much latitude for innovating or inventing.

This sophistication may be exemplified by complex technology or the requirement for large fixed investments, or both. Moreover the particular technology may be closely controlled by government agency regulation, such as Atomic Energy Commission or the FAA. Each of these impediments discourages the independent inventor from entering the field and inhibits any effort to use the patent system to reap a reward. In fact they encourage him to seek employment with a corporation or the government where the reward takes the form of a weekly paycheck and the corporation is left with the task of overcoming the impediments. Many talented inventors assign their rights to their inventions to the corporation in return for the opportunity to work in a technology which is otherwise closed to them as an independent inventor, because of the nature of the technology or because the probability of a reasonable

return on the investment required is either too small or too distant to make the risk to the individual worth the price.

IV

Corporate Patent Policy Factors

Aside from those two general considerations, there are several specific factors involved in corporate patent policy which could have an affect on the corporate inventor's attitude toward inventing in a corporate environment. By looking at the uses to which a corporate patent owner may put its patents, we can better understand the reasons for selecting certain inventions for patenting and how the employee inventor of that corporation is influenced by such a corporate decision.

The uses enumerated below are some of the more common factors entering into the decision whether or not to file a patent application on the invention, i.e., whether to use the patent system. Clearly not all of these factors may be pertinent to all corporations, but they illustrate the broad spectrum of corporate considerations which can affect the selection of an invention for filing by a corporation.

A. Patent Exclusivity

Patents can be used to protect the new developments from copying by a competitor. Thus the possibility of a suit for infringement, i.e., the enforcement of exclusivity, will in many cases result in a competitor expending funds to design around the patented development. Without the right to freely copy the patented item additional expense is incurred by the competitor and new technology developed which increases the total fund of public knowledge in the effort to avoid infringement. The requirement for generating a competitive non-infringing design is one of the problems commonly identified by a corporation for innovative effort by their technical staff.

Exclusivity is of primary importance to the independent inventor in any instance where the allocation of resources depends upon patent protection. The Government on the other hand has no interest in this aspect, except as the licensor under recent regulations allowing exclusive license grants. The corporation occupies a middle ground and will utilize the exclusivity in those instances where the allocation of resources was based upon the need for an exclusive position in the market. However, the corporation is more interested in insuring a proper return on its investment over a longer term and licensing for royalties on a nonexclusive basis, not only aids in

obtaining this return, but also increases the chance of the invention becoming a standard in the particular product. Moreover, licensing on a nonexclusive basis will allow the invention to reach market areas, the owner corporation may not be able to reach or service itself.

B. Defensive Nature of Patents

Patents give the corporate holder a defensive or trading position as against other patent holders which allows him to enter a market at a lower net cost than might otherwise be possible. The trading value of patents, particularly in new technologies, can result in lower royalties or the elimination of royalties, as between two holders of conflicting patents. This defensive position is not as significant a factor to individual inventors, since the individual inventor is more usually concerned with one or at most a few products in a closely related area.

While the government has made attempts to utilize this aspect of the patent system operation, little success is apparent. However, it is particularly significant to corporations, since the corporations exposure is usually based upon a large number of products in commercial production to which the risk of patent infringement attaches and therefore a defensive position must be established in a number of product areas to maintain freedom in the market.

C. Protecting Right to Use

Patents provide protection to the corporation against the issuance of a patent to another on the same development. This is usually referred to as protection for the right to use. While there are always risks that dominating patents exist, these risks can be minimized by using this defensive aspect of the patent grant. The individual inventor is not usually concerned with this purely defensive aspect of patent policy since it does nothing to either induce resource allocation or reimburse investment. Clearly the government also has little interest in this aspect of patent utilization in view of its right to a compulsory license under the statutes.

D. Royalty Income

Patents provide a basis for royalty income. In many corporate environments, an aggressive licensing policy is not used since it involves a large risk of litigation particularly in view of the significant changes which the courts are imposing upon patent prosecution responsibilities. In general, licensing is the least advantageous use of the exclusivity feature of the patent. Making, using and selling

the product protected by the patent usually results in maximizing the chance for a large return on investment, although it involves the greatest investment and requires enforcement.

Licensing on the other hand can be accomplished with relatively little, if any, product development investment and possibly no more cost than that involved in obtaining the patent. However, as patent validity holdings in the courts become a rarer event, licensing becomes less rewarding since more infringers are willing to undertake the risks of a suit particularly when supported by the increasing judicial unfriendliness to the patent system. The independent inventor is also interested in royalties usually in conjunction with an exclusive product development program which requires, at least for some initial period, the grant of an exclusive license in order to obtain the protection desired for the resources allocated and investment recovery. The government patent owner is less concerned with royalty income and more concerned about the exploitation of the patent for the good of the general public. Thus licensing income is no factor in the government patent policy.

E. Patent Portfolios

The establishment of a patent portfolio on a particular product makes it more difficult for a competitor to design around a single patent and increases the competition in research and in applying new technology. The corporation and the independent inventor are primarily concerned with the first of these results. The public benefits from the increased competition in the form of better and cheaper products. In the corporation, patent portfolio development is also important to increase the scope of the defensive patent position, widen the base for nonexclusive licensing in fields which the corporation does not reach and increase the likelihood that a proper return will be obtained on the investment.

F. Recognition of Invention Achievements

Patents function as a means for recognizing the achievements of the inventor. This is an important aspect to both the corporation and the government patent owners and can be used to demonstrate the level of competence of a corporate research staff in a particular technology. For the most part, this factor is not of great utility to the individual inventor, since it does not aid in replacing the resources used in generating the invention. However, it would appear to be useful to the individual inventor to establish his innovative capability and to convince prospective investors of his track record.

G. Timeliness of Invention

The invention must be timely in order to warrant protecting. All technologies have a direction in their development. There are always certain approaches, improvements or accessories to a product which are left by the wayside during the transformation of a technology to product sales. Those inventions which relate to or have utility only in approaches, improvements or accessories which have been passed by in the market or are too costly to introduce are not usually worthy of patent protection unless the defensive nature of patent protection is clear. In this regard, there is little or no difference between the corporation and independent inventor, both are concerned about the timeliness of the invention. Since government interest is more in developing the technology and disclosure to the public independent of commercial market considerations, this aspect has less significance to the government owner.

A clear distinction should be made however with respect to inventions which are not timely because they are ahead of their time, i.e., the pioneering or basic invention. Such inventions are clearly important to independent, corporation and government patent owners. In a corporation patent protection on this type of invention is obtained even though outside the market of interest, because it identifies a future area for resource allocation which could lead to wholly new products or possible corporate diversification into totally new fields.

H. Alternatives to Patents

The patent system may not be used at all. There are inventions which are more appropriately maintained as a trade secret or used openly, or made the subject of a publication. This consideration is particularly significant where the invention is (1) of marginal patentability, or (2) a minor process change, or (3) a short technological life, or (4) one of many alternatives and therefore easily designed around, or (5) patentable, but the scope of protection afforded is not worth the cost in patent office and attorney fees. The corporation has more latitude in the use of the trade secret approach since it has the assets to enforce any agreement covering a confidential disclosure as well as internal controls on dissemination.

The significance of the trade secret approach to the independent inventor is considerably less than that to the corporation. However, the independent inventor must consider this alternative if he decides not to rely on the patent system for protection. The independent inventor generally takes a significant risk of losing his proprietary position by exposing it to a number of organizations in

order to interest a potential sponsor in the commercialization of the invention. Since most corporations will not receive proprietary information without an agreement that only patent rights will be relied upon, the independent inventor is left with little use for the trade secret law. This lack of importance also applies to the government in view of the general policy of publication and dissemination for public information.

V

Effect of Corporate Policies Upon Employee Inventors

Having looked at the corporation side of this issue, let us consider the effects of these policies on the corporate inventor and particularly upon the incentive to invent, the incentive to disclose and the selection of inventions for patenting.

A. Incentive to Invent

In a corporate environment many of the problems are defined either by the research team, the product development management, or the customers to which the company addresses itself. The incentive to invent, i.e., to provide a solution to a problem, does not rest solely upon incentives supplied by the patent system. It is in the nature of a human reaction responding to a stimulus. There is no intention in this paper to analyze this complex subject. The reader is referred to the many existing sources which discuss the subject of the innovative process.

I think it is clear that the patent system was never designed to provide any reward merely for the inventive process *per se,* but only to provide a reward in the form of a market advantage after full disclosure of the invention. The inventor was placed in a position to obtain a reward in the market place commensurate with his contribution through the use of the grant of exclusivity for a term of years.

It should be recognized that much of the corporate research environment provided to the employed inventor is directed to the establishment of a climate which is conducive to the innovative process, and patents are a direct byproduct of that climate. Responding to this favorable climate the employee inventor develops new technology some of which is inventive. However, this response is not created by the patent system. The inventions and patents resulting from the employees' work are more in the nature of a fall-out from the corporate direction to advance the technology to obtain better, cheaper, newer, more efficient products for the market.

Having fostered the innovative process in its research and development activities, it is difficult to see why the corporation should now be accused of misusing the employee inventor because both the number of patents flowing from such an environment and the amount of the technical information made available to the public has significantly increased.

The problem is not one of too many corporate owned patents, but one of the failure of the system, particularly the courts and Congress in providing sufficient support and direction for the patent system so that the independent inventor will not be forced to join the ranks of the corporate research staff in order to make a reasonable living. The constant attacks on all aspects of the patent system from Patent Office prosecution to licensing can have little other effect on the independent inventor, than to force him into that course of action if he must use any proceeds from the exploitation of the patent to defend the patent and himself in the courts.

B. Incentive to Disclose

In the usual corporate research and development laboratories surveillance of all developments by both technical and patent personnel is a standard procedure. This usually takes the form of laboratory notebook review, technical report review and appropriate clearance procedures to insure that technical advances contained in papers submitted for publication are reviewed prior to dissemination for patentable subject matter. In addition, award systems are provided by forward-looking corporations to insure a monetary incentive to disclose to the corporation.

Thus the incentive of the patent system to disclose is a two-step process in the corporation. First the disclosure to the corporation and thereafter the public disclosure through the patent system, by publication or public use. The disclosure to the corporation augmented by review procedures and award systems clearly results in many inventions being disclosed which are not patentable, not commercially feasible, are untested, are incomplete, or are totally unrelated to the present and future direction of the market. Necessarily many of these will not be chosen as the proper subject matter for a patent application. This is understood by most employee inventors as a fact of life in the corporate environment.

The corporate inventor usually realizes that only a fraction of the inventions disclosed will be patented and when informed of the reasons for not filing, rarely concerns himself with the decision. The selection is viewed as another aspect of the overall competition

in technical innovation. At most if completely convinced of the merit of his invention, he will request a release from the corporation so that he can pursue it on his own.

C. Selecting Inventions for Patenting

The filing of applications and use of the inventions covered is a part of the selection process based upon commercial considerations and public needs and desires as viewed from the corporation. This selection eliminates those inventions which do not appear to meet any public need or desire in the market place or serve a useful corporate purpose. However, this does not mean that the inventions which fail to meet the market test may not be patented for one or more of the other corporate policy reasons stated above. Thus an invention may be patented by a corporation which if made by an independent inventor would not be considered for patenting.

The employee inventor usually has no significant role in the corporate selection process. It is more a matter of identifying a public and market need that is commercially significant than a technical need based upon the nature of the advance in the art. However, if the patented item is commercially successful, the corporate inventor may receive his reward in terms of salary increase, notoriety, additional responsibility, the allocation of more funds for perfecting the invention or improving it, or in some corporations, participation in royalty income received.

In those cases where the invention is not patented and not used, the inventor receives a reward commensurate with the contribution as measured in the market place, i.e., nothing. In the same manner as an individual inventor receives nothing when a patented invention of his has no market acceptance. There appears to be no reason to favor one type of inventor over the other and therefore proposals to require employers to grant awards to the employees having patented inventions would appear to be misdirected unless it serves some corporate purpose. Both inventors should be rewarded on the basis of their contribution to the public good, as measured by the need and desire of the public in the market place, not upon some abstract idea of the value of the invention purely as an advance in technology. If the corporate inventor is to receive rights in his inventions, in addition to the existing benefits of a superior working climate, the rush from the ranks of the independent inventor to the corporate employee will turn into a stampede. Thus the proposals to reward corporate inventors with invention rights would appear to defeat the purpose they are designed to support.

One of the more difficult areas to understand in corporate policies

is the situation where the invention is made, disclosed to the corporation, but is not considered for a patent for one of a variety of the reasons noted above. Some would urge that the corporation should be required to unconditionally release the invention to the corporate inventor so that he can exploit it. Aside from the fact that this merely utilizes the corporate environment to subsidize the employee inventor without a corresponding benefit to the corporation, it is not clear that any public benefit would result. This proposal would appear to be nothing more than a desire to substitute the judgment of the corporate inventor for the corporations judgment not to file. It is a rare inventor that has either the market visibility or access to market information sufficient to make such a judgment. Admittedly, the corporate judgment is not always correct, but usually filing is undertaken on inventions which have some chance of having a market significance. Thus corporate filing policies err on the side of patenting, thereby reducing the chance that an important invention has not been protected.

VI

Proposals For Governing Employee Invention Rights

It has been urged that the corporate inventor should not be requred to assign the invention to the corporate employer, but should only be required to grant a nonexclusive license to the corporate employer. This is basically a return to the law of shop rights. In this proposed arrangement, the inventor employee would be free to exploit the patent. Looking at this suggestion in the light of the policies and considerations outlined above, a myriad of questions arise. Why should a corporation allocate resources for the inventive process when all prospects point to the fact that its competition would be able to promptly use the patented item for a royalty payment to the inventor and the corporation would receive nothing for its investment? Who would pay the cost of patenting, particularly in foreign countries where these expenses are sizeable and the time consumed in obtaining a patent is large? Could the inventor obtain such coverage within the International Convention year or would he be able to prevent the corporate employer from publishing or using the invention until proper protection had been obtained? Would not such a situation be contrary to the purpose of the patent laws to foster disclosure? In the present judicial environment, how would the individual inventor support the huge litigation cost to enforce it? Would not the patent have to be exclusively licensed to some other company in order to support the allocation of resources to develop and embody the invention in a product for public consumption? If so, what purpose is being served by substituting a different company for the employer? The

patent system is designed to benefit the public not the inventor. The reward to the inventor is secondary to the benefit derived by the disclosure to the public. How can there be a public benefit by deliberately creating conflicts of interest between employer and employee, increasing the likelihood of litigation in already crowded courts, decreasing the chances that proper foreign protection would be obtained, and burdening the employed inventor with the responsibility to obtain financial resources, negotiate equitable license terms and act as entreprenuer at the same time he is attempting to earn a reasonable comfortable living in the corporate environment?

Other proposals to require awards to corporate inventors as suggested by Mr. Kuntz in his article in this issue, while worthy of consideration, should not overlook the fact that the award must bear some relationship to the value of the invention in the market place. The independent inventor's award is only measured in the market. The same method should be encouraged in the corporate environment through corporate recognition of the value to the corporation by allowing the corporate employee inventor to participate in the benefits received. Such a system should not be based upon a compulsory award system which puts a premium on quantity rather than quality of the invention, but should be measured by actual use in the market.

VII

Conclusion

We are not concerned here about a problem of a horse and buggy patent law, but rather one of space age technologists requiring more resources than the independent inventor can afford to allocate. What is really most phenomenal is that the patent system is sufficiently flexible to accommodate such a change in emphasis on sources of invention, while continuing to provide the independent inventor with the incentive to disclose as well as the protection he needs, at least to the extent that the courts allow, and at the same time providing a system in which the inventive capabilities of the corporate inventor can be fostered and utilized for the public benefit.

While the patent system together with the publication policies of the government and industry serve to diffuse the knowledge of advancements in sophisticated technologies to all, the number of technologies is increasing in which knowledge of many related arts is necessary to support an advancement in a particuar art. Clearly there are many technologies in which no extensive allocation of resources, technical or financial, is or will ever be necessary to sup-

port invention. But the level of technical understanding required in order to be sufficiently innovative to warrant patenting in many technologies is becoming higher. When both of these factors are combined, the drift of talent to the reasonably well protected corporate environment, can be more easily understood. Therefore it is not difficult to understand why the inventor would find the laboratories of the corporate environment clearly more secure, if not more rewarding.

It is difficult to see how any of the proposals to change the contractual relationships between the employee inventor and the corporaton can logically be discussed as a question of patent system operation.

Award systems involving participation of the employee in royalty income produced by his inventions are clearly a desirable approach. However, other alternatives to rewarding the inventor exists and the choice should be left to the corporation. This choice allows the corporaton to determine the importance of the patent system to its operations in the market which it has chosen to address.

The fact is the patent system is operating very efficiently in the corporate inventor area. The only real concern is one of making every effort to enhance the climate for invention by the independent inventor and increase the probability that he will be rewarded with more than a judicial determination of invalidity or misuse.

THEODORE L. BOWES



Mr. Bowes was General Patent Counsel for Westinghouse Electric Corporation's Patent Department until recently when he became consultant to that company pending retirement in July. He has a BS in electrical engineering from the University of Illinois and an LL.B. from George Washington University. He has long been known in the profession for his extensive involvement in association work, including the Council of the former Patent, Trademark and Copyright Research Institute of George Washington University and was also one of the founders and President of the Association of Corporate Patent Counsel. He is Executive Director of Intellectual Property Owners, Inc. and expects to practice law in the District of Columbia after retirement.

Ted Bowes is the Chairman-Elect of the Patent, Trademark and Copyright Law Section of the American Bar Association and will be the Chairman of that body for the year 1973-1974. He is also a former member of the Board of Managers of the American Patent Law Association and is known by all for his very clear and forthright views on many topics.

CORPORATE INVENTION AWARD PLANS
BY
THEODORE L. BOWES

It seems to me that there are at least three approaches to the desirability and appropriateness of providing special rewards for inventions—at least patentable inventions. These may be classified as nominal awards, substantial awards, and awards in accordance with union contracts or in response to legislation.

Those who adhere to the nominal payment approach often argue that any substantial payment leads to jealousy and a tendency to work secretly. Usually, persons arguing along this track are talking theory only because they have not tried any other plan. In our case, we have had over twenty-five years of experience with an extensive payment program and I have been unable to find a single instance of adverse effect. In other words, after talking with a number of inventors, engineering managers, division managers and corporate officers in our company, I have been unable to uncover any situation involving secrecy or jealously among inventors because of the Westinghouse Award System.

It is also argued by some that engineers and scientists are hired to invent and that engineers who are hired because of inventiveness can be rewarded by salary adjustments. We have seen no evidence that inventive engineers are paid any more than non-inventive people. It seems to us that the salary of any individual is based upon his total contribution to his employer and inventiveness is only one factor to be considered.

We strongly oppose any plan wherein inventors are paid in accordance with the use of their inventions which happens, perhaps, in some union contract arrangements, and some legislation, as for example the German law and as contemplated by the so-called Moss Bill.

A system for paying royalty to employee inventors is too complicated from an administrative point of view. It is completely illogical, in my opinion, to determine in advance that a certain percentage will be paid for the use of each invention. A fair price might vary from practically zero in one case to 6%, or even 10% in certain cases. If we take, as an average, 1 or 2% for each invention used, the payments will be too much in respect to some inventions and not enough for others.

The maximum royalty which can be paid and still maintain a competitive position is an important consideration. If an article is sold at a loss or is barely profitable, the manufacturer cannot afford any significant royalty. If an attempt is made to make a profit on every item, the inventor's return will depend upon his assignment to a profitable field and hence his return from inventions will depend upon his luck in assignment or his ability to maneuver politically for position.

If each inventor is given the same percentage, the article or other product may soon be priced out of the market or else all profitability may be killed. I expect that those advocating this kind of approach assume that patents cover a complete product and that only one or at least only a few patents are applicable to any particular device or system. However, it is quite possible that 15 or 20 patents will be represented in some way in a color TV receiver and I would venture a guess that an automatic electronic telephone system or a computer system might well embody 50 to 100 patents. Assuming 25 patents apply to a product and assuming that a royalty of 2½% of the selling price is possible on the product as sold, we come to the low pro rata share of 1/10 of 1% for each inventor. On the other hand, if we assume payment of 1% on each patent, the total on this particular product comes up to 25% — to the corporations own employees!

Moreover a plan for paying royalties to employed inventors involves extensive and therefore expensive bookkeeping for a corporation of any size.

This type of operation also raises the question of the appropriate royalty base. For example, if the invention relates to an insulating material, would it be fair to give a percentage of the selling price of a complete motor or generator or a percentage of the selling price of a complete system embodying one such motor? On the other hand, how feasible would it be to determine the proportionate selling price represented by the insulation itself? This does not seem insurmountable if only one invention is involved, but suppose the product is a system, each system is tailored to the particular requirements of the customer, and 10 or 20 inventions are involved in each system in different mixes. It is one thing to make these determinations for a standard product made by the tens of thousands, but it is something else to handle the burden of making a determination of what patents are involved in a one-by-one situation.

It is my own personal feeling that in most, if not all, cases the invention would not have been made except as a result of the company

efforts to train the employe and provide him with plant, tools, environment and other associations, technical background, capital, etc.

It might be argued that if an inventor wishes to capitalize on the value of his inventions, he should go into business for himself and not work for a corporation.

A commercially successful product may be successful because the last link of a long chain is forged. For example, the development by others of a material or a process for making a material, or machinery for processing the material, or the development of another component for an unsuccessful embodiment may make the product marketable. What do you do about the preceding improvements (perhaps not patentable) which have made possible the last invention?

Finally, how do you determine the value of an invention? The success of the invention may be due to other inventions, sales promotion, advertising, public fancy, etc. The situation is quite different than negotiating an arm's length royalty with an outside inventor. In the employe situation the utility of the invention is still guess work.

Some corporations make no payment for their own use of employe's inventions but agree to share royalty income.

Even this limited arrangement presents problems. It inhibits, for example, the exchange of licenses on a royalty-free or reduced royalty basis. Many licenses involve know-how as well as patents; sometimes the patents are included on a non-assertion basis. In such a case, how should royalties be allocated? Finally, when *all* patents are licensed for use in specified fields, but none are identified, how can royalty receipts be allocated?

One can sympathize with an inventor's pride and, perhaps, frustration. One can wish to tailor reward to value rendered. *But,* this is a real world, and proposed solutions involving payment of royalty seem entirely over-simplified, impractical, and inequitable.

One approach to the "problem" is to prohibit, by legislation, assignment of inventions to employers, at least by an all-inclusive contract or as part of an employe agreement. This proposal sounds plausible at first thought and permits—indeed requires—negotiation on each invention.

I must reject this solution for much the same reasons, i.e., complica-

tion and impracticability.

Westinghouse strongly favors substantial awards and is opposed to the other approaches discussed.

Under the Westinghouse system each Profit Center has a Patent Committee consisting of the Engineering Manager, the Marketing Manager and the Patent Attorney assigned to that particular Division. All disclosures of inventions relating to the product of that Profit Center are routed to that particular Patent Committee without regard to whether the invention was generated within that Division or came from some other source.

The Patent Committee determines whether it desires to have a patent application filed, assuming it is patentable, with respect to each disclosure. If filing is authorized, a sole inventor is given an Authorization to File award of $200; joint inventors split equally $300.

There is also provided a $500 Patent Award which is paid upon the issuance of each 5th patent regardless of sole or joint inventorship, i.e., upon the issuance of 5th, 10th, 15th patent, etc.

Obviously some inventors are somewhat more valuable than others. Westinghouse has a Special Patent Award, which is available upon nomination by the Division Manager, with respect to inventions which have proven commercially valuable to the Corporation. The award is based upon an application having at least one allowed claim or upon an issued patent. The minimum is $1,000. There is no ceiling. We average about three Special Awards each year at an average award of about $5,000. The maximum grant so far is $10,000. More than one Special Patent Award can be granted with respect to a particular invention. This takes care of the situation where the invention proves more valuable to the Corporation than originally understood.

Finally, certificates are awarded for the 5th, 10th and 25th patent and a plaque is awarded to each inventor who has issued 50 patents.

The basis for the present plan goes back many years, but the plan in its present form was instituted in January of 1965. The plan was adjusted at that time after a long study by a Committee comprising some of the top officers of the Corporation. Part of the study involved consideration of dropping the nominal award system or establishing a "royalty" relationship between the Corporation and

the inventor. In view of our experience, we believed that modernization of our existing plan was the best and we have been pleased with the operation of our present system. We believe that a substantial award program provides maximum public relations and recognition for both Corporation and inventor.

Some of the problems discussed above are present to some extent in award plans such as Westinghouse uses, but we believe our approach is practical and more equitable from both the view of the inventor and also the employer. By paying an Authorization to File Award, the minimum value of a patentable invention is set. If the invention is patentable, the Patent Award provides additional recognition. If commercial success is due to the invention, the Special Patent Award provides still further recognition and recompense.

By way of a suggestion, the rewards could be further tailored by adjusting the Patent Award in accordance with the value of the invention as it appears at the time the patent issues. This is normally of the order of three or four years after the invention is made and history helps to better determine its value. For example, the Patent Award might be determined by the Patent Committee between a minimum of, perhaps, $100 and a maximum of, for example, $1,500.

W. A. TYRRELL



Warren A. Tyrrell is executive director of the Technical Relations Division at Bell Laboratories, Murray Hill, N. J. He is responsible for coordinating technical exchanges between Bell Laboratories and domestic and foreign organizations, particularly industrial and governmental laboratories. These exchanges concern the various fields of research and development of interest to the Bell System. Dr. Tyrrell's division also serves as the focal point for liaison with AT&T and Western Electric Company on matters affecting technical exchanges, notably patent licensing activities and relationships with foreign telephone adminstrations. He is therefore concerned, at least in a broad way, with creativity and the protection of proprietary discovery and invention. Dr. Tyrrell received his B.S. and Ph.D. degrees in physics from Yale University n 1935 and 1939, respectively.

After joining Bell Laboratories in 1939, Dr. Tyrrell became engaged in microwave research and during World War II worked on various radar projects. He later became involved successively in research areas of optics, acoustics, telephone instruments, and underwater acoustics. In 1965 he became manager of technical relations and assumed his present position in 1970.

INVENTOR AWARDS: INCENTIVE OR IMPEDIMENT?

BY
W. A. TYRRELL

A major concern to those interested in management of industrial research and development has been how to stimulate technological creativity, innovation, and invention. One approach to a solution has been to provide, to the employee inventor explicit or special rewards for inventions and patents. Such awards may be a percentage of royalty income, or determined on a point or merit system whereby significant amounts of money can be involved, or fixed sums, often of modest proportions.[1]

Within American industry, many different patterns of what I will hereafter call "award systems" have evolved. From a recent survey[1] of some 150 companies, almost exactly one half have some form of award system, and the other half do not. Legislation[2] has been proposed to establish a uniform Federal policy. On the basis of our experience at Bell Laboratories, I feel that forcing all organizations into an identical pattern would be wrong and could actually be damaging to the nation's need for a high level of inventions and technical discoveries.

Bell Laboratories is one of the case histories described by F. Neumeyer in his comprehensive book, *The Employed Inventor in the United States: R&D Policies, Law, and Practice.*[3] Ever since its founding in 1925, Bell Laboratories has avoided any system of specific financial awards or royalties to individual inventors on its payroll.

Reasons why Bell Labs is opposed to an award system fall under two general headings, first, that it would not be fair, and second, that it would lead to concomitant effects of an undesirable nature. I will try to cover these reasons in some detail, noting that none of the following arguments is truly novel. Our views resemble a composite of certain points which have been asserted or foreshadowed by others, but it may still be of interest to have available in updated form the Bell Labs *apologia pro opinione suo* for ready reference.

[1]See Bowes article, p. 118.

[2]See the compilation in F. Neumeyer "Employees' Rights in Their Inventions," 44 Journal of the Patent Office Society 674 (Oct. 1962), and Kurt Laude "The Compensation for Employee Inventions in Germany," 44 Journal of the Patent Office Society 772 (Nov. 1962).

[3]MIT Press, Cambridge, Mass. 1971, p. 138 et seq.

I believe that an award system which operates in terms of only patentable inventions cannot be fair as it discriminates against other equally inventive and creative technical work which, for one reason or another, may not be within the present statutory classes of invention[4]. Even with regard to the inventive process which leads to patentable contributions to technology, the award system unfairly emphasizes the activity of only the person who is determined under the law to be the inventor, to the detriment of his associates who may also have made significant contributions though not to the inventive act itself. These other contributions might include technical and managerial leadership, collaborative interdisciplinary technical discussions, analysis showing engineering requirements which may point to specific inventions, technical support such as data taking, econometric and marketing analysis to define the technical need, patent attorney support, etc., etc. Our view is that a fair salary treatment should take account of all kinds of contributions.

There is ample opportunity to reward the employed inventor by recognizing his creativity as a factor. In many cases a dominant factor in performance rating. For example, Bell Labs conducts annual performance reviews[5] in which each technical employee is considered relative to his peers. The emphasis is on the past year's performance, with no intentional reference to original background, earlier work or potential. The result is a ladder of merit or current worth, with the most valuable person at the top ("the one we could least afford to lose at this time"). This process is performed in a sequence of organizational steps. Local ladders are interleaved to form ladders for successively larger areas. The process stops at the limit of a technical division or area, encompassing some hundreds of people, beyond which it would be difficult to make valid comparisons because of underlying differences in the nature of work performed.

Salary increases are awarded in close correlation with position on the merit ladder. Thus, the person to whom patents of value are issued receives financial rewards. It is noteworthy that in Bell Labs the salary differentials for one year alone, due to inventiveness, are quite comparable with the cash awards which are given to nventors in many other companies.

To repeat the argument about fairness, we believe that in our sys-

[4]One example might be the work of C. Shannon on information theory done at Bell Laboratories. See Gottschalk v Benson et al, 175 U.S.P.Q. 673 (1972).

[5]See E. I. Green "Evaluating Scientific Personnel". *Electrical Engineering*, July 1957, pp 578-584.

tem the inventor gets full recognition and reward, but so also do other employees whose contributions are not vectored along the same axes. Moreover, integrated over a period of years, an inventor's rewards may be very substantial indeed.

Turning to the second category of objections to an award system, I will now describe a couple of effects which could result from almost any such system. Foremost is our concern that personal communication and cooperation between individual scientists and engineers will be hampered. If there is risk that an individual may secure a patent and thus an award from the stimulation of discussion among colleagues, what incentive is there for free and open sharing of ideas and results?[6] We believe that our efforts to give full credit and financial reward to all the people involved in the creative process are likely to build up and maintain maximum freedom of technical exchange.

Almost 20 years ago this point was well made by Ralph Bown, the vice-president for research at Bell Labs:

> "We know that all inventing is a competitive race among individuals all over the world. It is this competitive element which leads to danger in special awards or rewards to inventors when taken outside the framework of their total contribution as compared with the total contributions of their coworkers. 'Each man for himself and the devil take the hindmost' may be a good motto for stimulating some kinds of effort but it has no place in the joint endeavor of a technical group of individuals pooling matched and interlocking talents and skills."[7]

Furthermore, another kind of reward which is important to many creative researchers is the recognition of their peers, both within and outside the company where they are employed. This recognition is often based upon technical papers presented at professional meetings or published in technical journals. The authors of these papers will be those who have significantly participated in the research or development. Those appearing as authors are selected by the individuals themselves in relation to their contributions to the work being reported; they are not determined in accordance with strict legal rules or principles.

[6]"A similar view was expressed in 1940 by Charles F. Kettering, in charge of research for General Motors, when he emphasized the importance of avoiding methods of compensation which would give an incentive to individuality in research performance at the expense of 'team play'." S. Melman, *The Impact of the Patent System on Research*, Study No. 11 of the Subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary, U.S. Senate, 85th Congress, 2nd Session.

[7]R. Bown, "Inventing and Patenting at Bell Laboratories," Bell Laboratories Record, Vol. 32, Jan. 1954, p 5.

A second real concern is the possible dilution of useful creativity by "busy work" whose main output is the submission of material for patent consideration. A critic might argue that even if an award system leads to many ideas of little value, all this low grade ore could somehow be processed to find an occasional nugget which might not otherwise have become available. To this I would reply that the whole business of analyzing patent submissions and deciding which applications to prepare and file is tedious and costly even under the best conditions.

We employ a two-step procedure for reviewing patent submissions. We prefer to have matters submitted to the Patent Division after first being approved by supervision in the responsible technical area. In most cases, the patent attorney then makes the ultimate decision on whether to seek patent protection. In this system, the technical management is free to evaluate an idea on the basis of its technical engineering and scientific merits and does not have to consider the personal involvement of the contributor. If, however, everytime an idea was submitted it meant a possible award of hundreds or thousands of dollars, the decision would tend to become more onerous and difficult. When a decision not to file means that the would-be inventor is money out-of-pocket, when a decision to file means that the inventors' associates may be jealous and embittered, when an award must be made to the creator of "the most valuable patent of the year",[8] how can the participants in the decision process fail to be swayed by a complex of emotional factors?

Having asserted that certain undesirable effects could occur, and since I have actually described above only some of the effects, I must address myself to other questions: Do they in fact occur? And, most importantly, does the main desired effect of more creativity occur under an award system?

It is manifestly impossible to answer such questions by any empirical approach. A suitable experiment could be imagined, where two essentially identical companies, one with an award system, the other without, would be compared with reward to creativity and patents acquired; even better would be a statistical ensemble of such pairs. The catch is, of course, that no two companies would be sufficiently identical to make a comparison meaningful. They would have to be closely the same with respect to area of technology, personnel, management, patent filing policy, etc., but in the business world

[8]This is not to say that such a designation does not provide an incentive. Last year two inventors at Bell Labs received the 1972 Outstanding Patent Award from the N.J. Council for Research and Development, and they were very appreciative and understandably proud. But this was an outside selection over which the employer had no control, and there was in fact no monetary award.

such pairs would be most improbable.

I can, however, attempt an intuitive approach by observing, first, that companies which have an award system do not seem to have acquired a disproportionately large share of patents, and second, to have developed and nourished a high degree of creativity. In the case of Bell Labs, for example, over 600 patents per year have been obtained for the last several years. Many of these patents give broad coverage of new devices and systems in communications technology. It is hard to imagine that such a technical staff would be spurred by an award system to a higher level of invention. Discussions with individual Bell Labs people who have been prolific inventors has shown that such people were generally motivated toward invention by the desire to find new and better solutions to current problems, that they derive their greatest pleasure by seeing their inventions come into actual practical use, that they feel amply rewarded by the personal recognition and salary treatment they were given, and that they are doubtful they would have been more inventive if an award system had been in force.

I observe, then, that Bell Labs seems to achieve a satisfactory degree of creativity without an award system.[9] I am thus tempted to answer the questions raised earlier by asserting that I have seen no tangible evidence proving the effectiveness of an award system, I am not sure such evidence exists, and I suspect that almost any award system does bring about some of the undesirable effects and side effects earlier described. This last assertion follows somewhat intuitively from the fact that in Bell Labs, at least, I have seen no interplay of extraneous factors in evaluation of submissions and decisions to file, and on the other hand, I have heard of instances occurring under an award system where there was some subordination of company interest in favor of individual interests.

The existence of a wide variety of award systems among numerous companies in the United States is in itself proof that no single award system could probably be optimum for all situations. I have given the arguments why Bell Labs does not favor any award system. While feeling that these arguments lead to the right solution for Bell Labs, I admit freely that some particular award system may conceivably be right for a totally different complex of technological and business factors. In any event, I must oppose vigorously any action on proposed legislation which would force industrial R&D laboratories to conform to a pattern of awards imposed by law.

[9]For a summary of some of Bell Labs scientific and technical contributions, see *Impact* edited by M. D. Fagen (Murray Hill, New Jersey, Bell Laboratories, 1971).

JAMES Y. BRYCE



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ENGINEERING — A PROFESSION OR A JOB?

CONFLICT OF THE INDIVIDUAL ENGINEER'S RIGHT TO IDEAS AND INCOME WITH CAPITAL'S RIGHT TO EXPLOIT THE EFFORTS OF ITS EMPLOYEES.

BY

JAMES Y. BRYCE*

I. Introduction

This issue of the APLA Quarterly Journal is devoted to conflicts arising between the individual creative thinker and his corporate or otherwise capitally concentrated employer. This article deals with the experience of one such individual in conflict with a large corporation. The perspective is that of a lawyer seeking solutions for this individual as his client. Exhaustive legal analysis is not presented, but questions touching the fields of intellectual rights, antitrust, and professionalism are raised.

II. The Fact Situation

Mr. Bills, has three engineering degrees and has worked for industral firms during the last nine years. He is a registered Professional Engineer in the state of Texas. His major fields are Aerospace, Turbine Engine Design, and Home Products with emphasis in design of materials for special applications. He has worked on both the East and West Coasts and in the central United States. Presently he is teaching at a leading state university in the school of technology. He also engages in inventing and part-time consultant work.

The corporation, HAL is a large manufacturing concern. It is involved in state of the art development of various products, and numerous applications of highly-sophisticated technology. HAL has frequently been involved in lawsuits regarding intellectual

*The author acknowledges assistance provided by the following persons in the stated areas of law: Professor James Treece, University of Texas School of Law, Intellectual Rights; David R. Richards, Attorney at Law, Austin, Texas, Antitrust; Roger Bartlett, Student, University of Texas School of Law, Research of Law of Professional Engineering; Jep Hill, Student, University of Texas School of Law, Research of the Law of Employee/Employer. Responsibility for any errors of omission, commission, or interpretation are of course borne wholly by the author.

rights, antitrust, and employee relations. HAL requires all of its employees, and certainly those at the professonal and engineering level, to execute certain agreements regarding discoveries and disclosures of inventions.

Mr. Bills' assignment at HAL concerned development of materials for use in many of HAL's products. Mr. Bills was employed as an engineer and diligently sought to assist HAL in solving such problems. He signed an employment contract and other documents including a document designated "Confidential Information and Invention Agreement" and briefly described in Mr. Bills's Application for Employment as follows:

> This agreement commits the applicant not to divulge any confidential information that he obtained through previous employment other than [HAL] and assigns to [HAL] the entire right, title and interest of any inventions or ideas during the period of time in [HAL's] employ.

Pertinent parts of this agreement will be set out and discussed below.

Mr. Bills had a friend and neighbor, Mr. Tudor, with whom he frequently had social contact and discussion. Mr. Tudor was an independent man skilled in various fields and taught Mr. Bills various building construction techniques and the use of explosives in such construction. HAL is not engaged in these areas and discourse between Tudor and Bills was limited to topics generally outside the scope of HAL's business.

One day Bills stopped by Tudor's house to borrow a jack hammer and air drill to blast out some hard rock in the Balcones Fault section of Central Texas, preparatory to planting trees on Bills' property. As Bills walked through Tudor's living room, he observed some rough sketches on the table. These sketches involved a device, a "run engine" that Tudor was attempting to adapt for use as an aid in driving heavy commercial vehicles.

Being curious and naturally inclined to inquire into any engineering device new to him, Bills asked Tudor how the run engine functioned. Tudor explained theory and practical application of the device. While attempting to make the run engine more understandable to Bills. Tudor suggested its application to a particular product that Bills was familiar with as it was manufactured by HAL. The nearly revolutionary change that would be brought about in this product were the run engine applied to it immediately struck Bills. Apparently Tudor also recognized the value of the conception. Bills asked that Tudor direct him to the litera-

ture regarding run engines so that he could become familiar with the state of the art. Bills recognized his obligation to present these ideas in proper form to HAL in accord with his agreement and also recognized his obligation to provide Tudor with some credit for the germ of the idea.

Bills immediately began research of run engines and noted his findings in an engineering notebook issued by HAL. Bills pursued the concept of applying run engines to a "multi-element" version of HAL's product. Tudor, having been struck with similar insight, began developing applications of the run engine to a "single-element" version of such product.

In accord with HAL's policies Bills had the work in his engineering notebook witnessed by two employees of HAL on frequent occasions as his entries progressed. Among those employees witnessing Bills' work were his engineering co-workers and his superior. None of these parties discouraged Bills from pursuit of his ideas; most, including his supervisor, encouraged him and gave no indication he was perhaps running afoul of HAL's policies.

Although Bills always worked on this engineering notebook during his off hours and not during his regular hours with HAL, he necessarily took it to HAL's plant for witnessing. Bills requested a fellow employee, that had not witnessed his notebook before to review it in accord with company policy. It became apparent to Bills following this party's review that the new witness intended to expropriate Bills' ideas and attempt to take credit for them within HAL's employee incentive program. Recognizing the realities of competition among technological employees in corporations such as HAL, Bills proceeded immediately to file a HAL "Invention Disclosure" in accord with HAL's policies regarding discoveries. In Bills' mind such disclosure was premature, as his ideas had not been fully developed in the engineering notebook. However, he felt compelled by intercorporate pressure to make immediate disclosure.

In this disclosure statement Bills listed two inventors: himself and Mr. Tudor. Mr. Tudor was not and never has been an employee of HAL. Mr. Bills explained in the portion of the disclosure entitled "Background Information" that ". . . [Mr. Tudor's] original concepts and disclosures concerning [run engines] and their applications to [the instant product] . . ." were the basis of his work.

Disclosure by Bills that a party not employed or otherwise obligated to HAL was, however peripherally, involved in the development of this idea triggered immediate investigation of the situation by

HAL's technical and legal staff coupled with extensive interrogation of Bills. Bills was required to turn over all information regarding the invention including information kept for his own use in his home and forming part of the library of lifetime work ethically required to be maintained by a Professional Engineer. In addition Tudor was contacted and requested to sign a "Letter of Understanding" prepared by HAL for submission to third parties developing ideas and attempting to submit them to HAL. In essence this document is signed by the third party and releases HAL from all obligation to compensate the third party for his efforts. It is believed that Mr. Tudor has, quite reasonably, never signed such a "Letter of Understanding."

Meanwhile, Bills, following the extensive interrogation and investigation, was summarily dismissed the week following filing the disclosure statement. Investigation by the state employment commission elicited the following response:

> You were laid off from your last work at your employer's convenience. The separation from work under these circumstances does not constitute a discharge for misconduct connected with the work. [Letter from employment commission]

Mr. Bills contacted an attorney and request was made through HAL's corporate hierarchy for a hearing of his case by the office of the corporate president. A representative of that office was dispatched and met with Mr. and Mrs. Bills in the presence of their attorney. This meeting of roughly three hours evoked the following response by letter:

> A review was made of all the circumstances surrounding [Mr. Bills'] dismissal from [HAL] and the results were reported to [HAL's President's] office. I assume you are familiar with the facts not only from your discussions with your client, but also as a result of your participation in the February 30 meeting between [HAL's representative] and [Mr. and Mrs. Bills].
>
> In view of [Mr. Bills'] actions and all the circumstances surrounding this situation, we are fully convinced that his dismissal from the company was proper. [Letter to attorney]

Mr. Bills had faced the knotty ethical problem of attempting to give credit where credit was due with respect to Mr. Tudor, while fully and competently performing his tasks and duties to his employer, HAL. The result was his dismissal and ensuing severe economic hardship that resulted in his working in construction industries for

several months to support his family. Though he had acted in good faith toward HAL and HAL had instructed the state employment commission that Bills' dismissal was not grounded upon fault, Bills' found all his applications to industrial employers rejected. HAL steadfastly maintained all requests for personnel recommendations on Bills would be devoid of the facts surrounding this incident and would not have negative content. Nevertheless, despite the passage of nearly a year since his dismissal, Mr. Bills has been unable to find a position within the industrial complex and has chosen to enter academic life at a considerably lower rate of monetary compensation.

Bills feels his actions have been more than unjustly punished, that he acted in good faith toward HAL and Tudor, that he acted in accord with HAL's stated policies relevant to situations such as this, and that if there be fault, HAL has failed in instructing him fully in these matters and in instructing its agents, including Bills' supervisor who was fully aware of the circumstances.

Mr. Bills has employed counsel to explore and pursue whatever legal remedies may be available to him.

III. Damages and Questions

Bills has had considerable and varied losses as a result of this occurrence. His personal, historical engineering records have been removed by HAL. His professional reputation has been damaged. His income and income potential have plumetted. He has incurred costs of legal consultation and research. He has derived no benefit within HAL for the work he has pioneered. He is apprehensive concerning his independent development of these ideas. He has lost a considerable amount of faith in the responsiveness and fairness of American industry toward its employees, particularly professional employees.

In considering this matter the following broad legal questions have been developed:

1. What is the status of engineering as a profession *vis a vis* the emergence of capital concentration in giant corporations and other business or government entities?

2. What is the creative employee's obligation to a capitally concentrated entity that employs him to create and circumscribes rewards for his genius by an agreement that bestows his ideas upon the employer with no reciprocal duty to compensate in an amount commensurate with his creations?

3. What is the employer entities' obligation in such a circumstance?

4. Do attempts by an entity, such as HAL, to limit its employees' creative pursuits under threat of discharge or other sanction act as a restraint of trade?

Discussion of these questions is offered as a starting block for research and litigation; it does not purport to be an exhaustive analysis of the law in these areas, but only an indication of the trend.

IV. Discussion

1. What is the status of engineering as a profession *vis a vis* the emergence of capital concentration in giant corporations and other business or government entities?

An engineer in contemporary society cannot normally function outside an employing company or government agency. A few have been successful as consultants, but these are a very small minority and they are almost exclusively engaged in civil engineering. The remaining engineers work in companies, education, government or jobs other than in engineering. Virtually all engineers employed in government, business or education are subject to some form of "Patent Agreement" which must be executed prior to employment. Apparently the only consideration offered for such agreement is the job offer.

Engineering is considered a profession and numerous professional engineering societies are in existence. The practice of engineering is regulated in most states and registration and certification as a Professional Engineer is generally required [TEX. REV. CIV. STAT. ANN. art. 3271a (1965)]. As a profession engineers are held to a high level of ethics toward both the state and members of the public:

* * * *

> In furtherance of such intent and purpose of the Legislature, the practice of engineering is hereby declared a learned profession to be practiced and regulated as such, and its practitioners in this state shall be held accountable to the state and members of the public by high professional standards in keeping with the ethics and practices of the other learned professions in this state. [at § 1.1]

* * * *

Despite such admonition carrying the force of law contemporary engineers are compelled to become employees caught in a maze of conflicting obligations to their profession, the state, the public, and their employer. Frequently corporate engineers are expected to work uncompensated overtime and, as in the instant case, not only donate all of their intellectual creations to their employer, but also accept dismissal following alleged failure to properly execute unexplained and ambiguous company policy.

It is frequently said that engineering is one of the lower paid professions. Unfortunately, due to the demise of the independent professional engineer, the field of engineering is in total disarray and technical societies and organizations are substantially controlled by concentrated capital which is eliminating engineering as a profession by making engineers dependent solely upon such capital for financial security.

There is a multiplicity of rules and regulations regarding qualification and entry into the various state boards of registered engineers. Many boards do not recognize credentials from other states. In the context of contemporary society, engineering impels engineer-employees to travel frequently in their occupation for one employer or to change employers as the job market demands. Many engineers do not attempt to register with the numerous state boards whose regulation has proven ineffective for other than the private engineer offering his services to the public at large.

An engineer is a member of the application arm of the scientific community which is made up of some of the most dedicated people in society. This dedication coupled with individualism and idealism causes most engineers to avoid the hassle of politics, court fights and lobbying which is basically foreign to their mathematical and physical research-oriented minds.

Word seems to be out. Enrollment in engineering colleges across the country is taking a nosedive. Students do not want to go into a profession facing numerous and unpredictable lay-offs and substantial insecurity and lack of reward for creative effort. Engineering is a profession in theory only; in the reality of 1973 it has become a field occupied by persons treated as ordinary laborers, yet dissuaded from labor organization by the elusive but ineffectual designation of "professional."

> 2. What is the creative employee's obligation to a capitally concentrated entity that employs him to create, yet circumscribes rewards for his genius by an agreement that bestows

his ideas upon the employer with no reciprocal duty to compensate the employee in an amount commensurate with his creations?

3. What is the employer entities' obligation in such a circumstance?

As a condition of his employment Mr. Bills was required to sign an "Employee Confidential Information and Invention Agreement" promulgated by HAL on a printed multi-copy form. This agreement reads in substance as follows:

EMPLOYEE CONFIDENTIAL INFORMATION AND INVENTION AGREEMENT

In consideration for Employee's employment by HAL:

I.

Employee will comply, and do all things necessary for HAL to comply, with United States Government regulations and contracts, and with the provisions of such regulations or contracts that relate to the safeguarding of information pertaining to the defense of the United States or to the patent rights of the United States or of any contractor.

II.

Employee assign to HAL his entire right, title and interest in any invention or idea, patentable or not, made hereafter or conceived hereafter solely or jointly by him:

1. While working in HAL in a managerial, technical, research or engineering capacity (including manufacturing, sales and customer service engineering); and

2. Which relates in any manner to the actual or anticipated business or research of HAL or is suggested by tasks performed by employee for HAL; employee specifically excepts any invention or idea he cannot assign due to a prior agreement and sets out the particulars of such instance on form 370 attached hereto.

3. Employee will disclose any and all inventions or ideas encompassed by the foregoing paragraphs to the local HAL Invention Disclosure Officer and will promptly execute a specific assignment of title to the idea or invention to HAL.

4. Employee has listed on form 370 all other ideas or inventions not mentioned above in which he may have a right, but does not hold a patent.

III.

1. Employee will not disclose to anyone outside of HAL, or use in other than HAL's business, any confidential information or material relating to the business of HAL or its subsidiaries, either during or after his HAL employment, except with HAL's written permission. Employee also understands that information and materials received in confidence from third parties by HAL and its subsidiaries is included within the meaning of this paragraph.

2. Employee will not disclose to HAL, or induce HAL to use, any confidential information or material belonging to others.

Employee acknowledges receipt of a copy of this agreement and agrees that with respect to the subject matter hereof, it is his entire agreement with HAL.

HAL Representative	Employee
Date	Date

At first blush various contract theories almost jump from the words of this agreement. HAL has agreed to employ Bills and nothing more. In exchange for employment Bills has agreed to give HAL virtually all intellectual property he may have or come to know. There is no assurance he will be compensated in any degree by HAL for any of his efforts. Further, there is no assurance his employment will be continuing. In a state such as Texas employment at will of the employer is clearly established. An employee may be discharged for no fault whatsoever.

In *St. Louis S. R. Company v. Griffin*[1] the absolute right of each party to an employment contract at will to terminate the contract without notice or cause was held to be protected by the Equal Protection Clause of the Fourteenth Amendment of the United States Constitution. Thus, a Texas statute requiring a corporation discharging an employee to give that employee notice in writing of its reasons for such discharge was invalidated on grounds that the statute implied the employer must have a reason for dismissal. However doubtful *Griffin* may be as a Constitutional case a half century later, the principle that an employment contract at will is terminable without cause or notice by either party remains unquestioned. *Texas Employers Insurance Association v. Hale.*[2]

The status of TEX. REV. CIV. STAT. ANN. art. 5196, §3 (1971) employee written notice of the reason for his dismissal is curiously uncertain. *Griffin* invalidated a virtually identical statute, and the Texas Attorney General stated in an opinion[3] that the *Griffin* objections ran to the entire statute and not merely to the precursor of Section 3. This uncertainty is probably the reason the statute has not been seriously relied upon in any case and doubtless accounts for the refusal of the court in *Office Employees International Union v. Houston Lighting and Power Company*[4] to consider the constitutionality of Article 5196. Bills could probably not enforce a demand for full written notice of the reason for his dismissal; more importantly, Article 5196, §3 cannot be read so as to obligate corporate employers to discharge employees only for reason.

[1]171 S.W. 703, 704 (Tex. 1914)
[2]231 S.W. 2d 769, 772 (Tex. Sup. 1951) reaffirming the proposition.
[3]Ops. Att'y. Gen. Tex. WW 114 (1957)
[4]314 S.W. 2d 315, 325 (Tex. Civ. App.—Austin 1958, writ ref'd n.r.e.)

Bills has been required to sign a contract in exchange for being employed virtually from minute to minute by HAL. He appears to have no right to know the exact reason for his dismissal, no possibility for damages arising from his monetary loss as a result of such dismissal, and therefore no certainty of any consideration worth a small fraction what he may enable HAL to generate through exploitation of Bills' genius.

Bills was presented with a contract he could not negotiate with HAL. Had he attempted, the offer of employment would have been withdrawn and the contract, which would be most aptly described in classical contract jargon as a contract that should fail for want of consideration, adhesion, vagueness, and unconscionability, *Henningsen v. Bloomfield Motors, Inc.*[5] would stand by virtue of the current state of the laws of employment and intellectual rights.

In a case very similar to Mr. Bills', *Jamesbury Corp. v. Worcester Valve Company*[6] the employee signed a contract agreeing to give the employer all rights to "inventions" made by the employee during his employment. The employee conceived an idea during his employment but did not reduce his conception to writing until he had severed his employment relationship and formed a corporation to develop the idea. The Court held the contract did not govern that conduct and the patent involved belonged to the employee and not the employer. However, the Court carefully distinguished cases in which the employee agreed, as Bills apparently did, to assign to the employer ideas (as opposed to inventions) conceived during the employment relation.

Generally an employment contract is considered to furnish adequate consideration simply by granting the employee continued employment. *Misani v. Ortho Pharmaceutical Corp.*[7] Generally a written contract will be supported in its post-termination restrictions, only if those restrictions meet the following tests:

* * * *

(a) The restriction is no more than is reasonably needed to protect the employer;
(b) The restriction will not be unduly harsh and oppressive on the employees; and
(c) The restriction is not injurious to the public.[8]

* * * *

[5] 32 N.J. 358, 161 A.2d 69, 75 A.L.R. 2d 1 (New Jersey 1960)
[6] 443 F.2d 205 (1st Cir. 1971)
[7] 198 A.2d 791, 141 U.S.P.Q. 53 (N.J. Super. Ct. 1964), reversed on other ground at 210 A.2d 609, 145 U.S.P.Q. 625.
[8] Schmidt, *Inventions and Proprietary Information: A Tug of War Between Employees and Employers.* 7 LAW NOTES 39 (ABA 1971); an excellent source of information for the general practitioner.

The current state of the law weighs heavily against Mr. Bills's success in defeating the Confidential Information and Invention Agreement. His best arguments probably rest in the area of adhesion and unconscionability, although the illusory nature of his continuity of employment is such that failure of consideration should be argued.

> 4. Do attempts by an entity, such as HAL, to limit its employees' creative pursuits under threat of discharge or other sanction act as a restraint of trade?

Attempts by HAL to prevent Bills from exploiting his ideas, particularly in light of the minimal consideration paid Bills, may run afoul of various Federal and state antitrust laws. Antitrust law of both the United States and the several states is particularly appealing due to its broadly-stated provisos:

> Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations, is declared to be illegal... *15 U.S.C. § 1 (1963)*

And antitrust law is appealing in light of the damages collectable thereunder:

> Any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor in any District Court of the United States in the District in which the Defendant resides or is found or has an agent, without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney's fee. [§ *15*]

Similar provisions obtain in numerous state statutes [e.g. TEX. BUS. & COM. CODE § 15 (1968)].

Antitrust law in the context of Mr. Bills' case is nearly nonexistent. Examining his case reveals several areas for fruitful development of antitrust law. Any action by HAL attempting to prevent Bills from development and exploitation of his ideas will detrimentally affect commerce and competition among producers. Any attempt, overtly or covertly, by HAL to "blacklist" Bills and therefore interfere with his involvement in the marketplace may be construed as a restraint of trade, particularly in light of the good faith exhibited by Bills in following HAL's policies and the ambiguities in such policies.

Failure to allow Bills' development of his ideas and just recompense for the damages done him, injure not only him, but the public at large in destroying the independent creativity of our engineers, scientists, and technicians. Ultimately HAL itself will suffer the consequences of attempting to too closely regulate its professional personnel.

V. Conclusion

It appears that the creative, technically inclined person is poorly if at all protected in his relationships with employers. His integrity is being compromised by the concentration of capital and its ultimate control of his only saleable product, his ideas. If remedies are not developed for the individual enmeshed in problems such as these, we shall shortly observe the complete demise of small technological firms, a resulting loss of many ideas, the stagnation of economic competition and fruitful and varied development, and the further concentration of the means of production into the hands of a few who would, perhaps not maliciously but with similar results, dictate the economic status, rewards and civil liberties of the vast majority who have become simply wage-earners marking time for an impersonal employer. This article has concerned the frustrations and the dilemmas faced by one man caught in such a problem. This is but the beginning of what will become an increasing problem throughout our society. The law must respond effectively and quickly to meet this crisis or suffer the loss of yet another set of the freedoms upon which it was founded.

JOHN C. STEDMAN



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His education includes a Bachelor of Arts and an LL.B degree from the University of Wisconsin and an LL.M from Columbia University. His experience besides his University teaching career ranges from being Secretary to Justice Edward T. Fairchild of the Wisconsin Supreme Court to being Associate Counsel to the Senate Judiciary Subcommittee on Patents, Trademarks and Copyright. He has been a member of the National Inventors Council, U. S. Department of Commerce since 1963, and was chairman of Committee 106, "Inventors", of the American Bar Association, Patent, Trademark and Copyright Section, 1970-71. He has spoken frequently before patent law associations and other groups on the subject of the employed inventor and is probably more closely associated with that topic than any of his professorial colleagues.

THE EMPLOYED INVENTOR: ISSUES, BUT NO ANSWERS

BY

JOHN C. STEDMAN

Let me say at the outset that I can pose the current issues—at least I think I can—concerning the employed inventor. As for answers, I do not have them. I cannot even suggest them. The most I can do is suggest how we might go about getting them, and this I will do.

The first step, of course, is to pose the issues. These are more numerous and complex than some simplistic analyses would suggest. Perhaps one should start with the question: (1) Why should we explore this relationship anyway? Once we get past this point—if we do—substantive questions arise: (2) What are the possible alternatives for providing stimuli and direction to the employed inventor? (3) What *kinds* of stimuli and rewards might be employed? (4) What do we want to accomplish? (5) By what means insofar as the inventor is concerned can we achieve these objectives? (6) Assuming the inventor should be "compensated" for his contribution, how do we determine and evaluate that contribution? (7) What form may "compensation" take? (8) Who should pick up the tab?

These, as I see it, are the crucial questions we must ask. I will discuss them, but not answer them—for reasons that will become apparent. Since I do not answer them, we are left with one final question: (9) How do we go about getting the answers?

Let me take up these nine questions in order.

1. *Why should we be examining this issue, anyway?* The dogs have been sleeping for decades. Why not let them lie? The answers are several. There are unpleasant people around, including the author, who are not disposed to let them lie.[1] And for good reason. Around 80% of today's patented inventions originate with employed inven-

[1]Neumeyer, The Employed Inventor in the United States: R & D Policies, Law, and Practice (M.I.T. Press, 1971); Lassagne, The Legal Rights of Employed Inventors, 51 A.B.A. Jour. 835 (1965); Koenig, The Shop Right—Time for Limitation, 49 J.P.O.S. 658 (1967); Report, Committee 106, A.B.A. Section of Patent, Trademark and Copyright Law, 74 (1971); Kuntz, The Inventor's Incentive to Disclose in the Corporate Enterprise System, supra, p. 85; Davis, Program for R & D on Incentives for Invention and Innovation (unpublished), see 1 Action 297 (1972); Stedman, The Employed Inventor, the Public Interest, and Horse and Buggy Law in the Space Age, 45 N.Y.U.L. Rev. 1 (1970); H.R. 2370 (Moss bill), 93rd Cong. (1973); H.R. 5918 (Brown bill), 89th Cong. (1965).

tors. Over half of the R & D presently done in the United States is paid for by the Government—which means that the taxpayer is footing the bill. Given a desire as consumers to get what we can for our money, and a declared general public policy of "promoting the progress of . . . the useful arts," as the U. S. Constitution puts it, the legitimacy of the public's concern to see that the system operates satisfactorily is beyond dispute—especially in the face of some indications that our technological accomplishments may not have kept pace in recent decades with our expenditures in money and manpower.[2]

There are additional factors: (a) There is the increasing restiveness of the inventors themselves.[3] While this restiveness may be partly explained by the correspondingly increasing tendency of individuals generally to challenge their treatment at the hands of the institutions that have heretofore dominated them,[4] it also appears to stem from a dissatisfaction with the way they are being treated. (b) There is the uneasy feeling that we are being outdone technologically by foreign producers, with resultant competitive disadvantages and trade imbalances. (c) There is the fact that other countries show little disposition to follow our lead with respect to the employer-employee relationship and instead favor legal protection for employed inventors. We or they may be on the wrong track—and it might be we are. (d) There is disagreement as to the merits of our policies, as the accompanying articles show. Mr. Kuntz is a practicing professional engineer, a long time corporate employee, and he ought to know. Mr. Bowes is an experienced corporate lawyer intimately associated with large corporation R & D policies and practices, and he ought to know. So is Mr. Hamann, and so should he. Yet, each gives us a different picture, lending support to the suggestion that we had better find out what goes on.[5]

2. *What are our choices?* So, granted the worthwhileness of looking

[2]Barber, The Politics of Research, 28-31, 50-70 (1966), Rines, A Plea for a Proper Balance of Proprietary Rights, I.E.E.E. Spectrum, Apr. 1970, 41, 45. Cf. Melman, The Impact of the Patent System on Research, Senate Judiciary Subcommittee on Patents, etc., Patent Study No. 11 (1958).

[3]See references in note 1, supra. In addition, professional associations that have traditionally remained aloof in this area, such as the American Chemical Society, have in recent times concerned themselves with this issue. Quigley, Perspectives on Inventor Compensation, 67 Chem. Eng. Progress, No. 1, p. 28 (1971).

[4]Cf. *Ware v. Merrill, Lynch, Pierce, Fenner & Smith, Inc.*, C.C.H. 1972 Trade Cases, par. 74.136 (Calif. Sup. Ct. 1972), holding a restriction in a profit-sharing agreement barring an ex-employee from engaging in competition, illegal under California antitrust law. Jurisdiction noted, U.S. Sup. Ct., 1/22/73, C.C.H. 1973 Trade Cases, par. 72.312.

[5]The situation could be aggravated should the Government start leaving more rights with its contractors, as it sometimes shows signs of doing. Changes in our foreign relations (for instance, if a reverse "brain drain" were to set in, or as a result of increased foreign operations by U.S. concerns) could also have an effect. These, of course, are imponderables.

at the matter, we turn to the first question of substance: What are the possible ways of approaching the issue? I suppose there are at least three [6] basic approaches we might take: (a) At one extreme, we might leave it to private bargaining between employer and employee. (b) At the other extreme, we might lay down legal rules binding both employers and employees, dictating the practices to be followed in adjusting their respective interests. (c) In between, we might permit a large measure of private discretion subject, however, to some limitations upon the exercise of that discretion.

Elements of all three appear in our system, although the concept of private bargaining is dominant. Without going into detail,[7] let me summarize the picture as briefly as its complexity will allow. Our basic approach is that the employer and employee should decide through the bargaining process what the arrangement between them shall be. Needless to say, this can result in an endless variety of arrangements, depending upon the respective attitudes and interests of the parties, the type of work the employee is expected to do, the relative bargaining power of the parties and, intimately tied to the last, the alternatives open to the employee. Bargaining power is influenced immeasurably by supply of inventive talent and demand for it—and, of course, by the degree of talent possessed by the particular individual. It is also influenced by variations in policy as between different concerns, some of which may be quite grasping and niggardly vis a vis employees, given the opportunity to get by with this approach, and others that may operate in a more enlightened fashion on the theory that "what is good for its employees is good for the company."[8] Of especial significance potentially—although little of the potential has been realized to date—could be (a) variance in policies as between different establishments, e.g., industrial corporations on the one hand and non-profit, educational or Government institutions on the other, and (b) the injection into the picture of collective bargaining or comparable activity via labor unions or professional associations.[9] In any event, it is this free-enterprise, free-bargaining approach that is strongly and widely supported by most employers and, it would appear, by most em-

[6] There may be others.

[7] For detailed discussion, see Neumeyer, op. cit. supra, note 1, especially Chapter 2. See also, Stedman, Rights and Responsibilities of the Employed Inventor, 45 Ind. L. Jour. 254 (1970).

[8] Similarity to any familiar quotation, living or dead, is purely coincidental.

[9] There has been little labor union activity in this area, to date (for instance, recent union listings of topics for study by the National Productivity Council do not even *mention* inventive activity!). There are explanations for this that I will not go into here. The situation could change if employed inventors came to see themselves more as mere employees and victims of weak bargaining power. Cf. the increasing tendency of professional and white-collar groups (teachers, public employees, clerical workers, etc.) to engage in more militant union activity.

ployees as well, notwithstanding that the latters' bargaining position vis a vis their employers is likely to be on the weak side—a weakness that often is reflected in the contract terms.

"Freedom of contract" does not, however, operate without limits. If the employer has driven an unduly hard bargain,[10] the courts may refuse to enforce the contract as written, on grounds that the employee (typically an ex-employee for obvious reasons) has been deprived of his opportunity to make a living, that the contract destroys the incentive to create, or that it restrains competition.[11] Courts are inclined, also, to interpret agreements strictly against the employer on the theory that the employer is the one who draws them up.[12] Cases of the sort discussed in this paragraph arise infrequently. The law also injects itself into the picture, as it necessarily must, in those situations where *no* contract or understanding exists and the parties are in dispute as to their respective rights. Here, prevailing common law doctrine holds that if the employee was "hired to invent" the invention belongs to the employer. If he made it entirely on his own with no help of any substance from the employer, it belongs to the employee. If made outside the employee's assigned duties, but with some input by the employer (done on company time, through use of company facilities, with help from co-employees, etc.), it belongs to the employee, but the employer receives a "shop-right," i.e., a free, non-exclusive, non-assignable license to use the invention.[13] There are some indications that this common law doctrine, supposedly neutral, has sometimes operated to the advantage of the employer.[14]

Such legislative or public regulation law as exists in this country, is extremely limited and appears to be confined to *Government* situations in which the Government is the employer of an inventor or is contracting with an employer.[15] In general, the basic policies followed by the Government do not differ greatly from those fol-

[10]See, e.g., *Guth v. Minnesota Mining & Mfg. Co.*, 72 F.2d 385 (7th Cir. 1934). Court cases in which an *employee* has driven an unduly hard bargain do not seem to have arisen.

[11]The Supreme Court decision and opinion in the *Merrill, Pierce* case, supra note 4, could conceivably have some relevance to the issue at hand. Again, it may not.

[12]*Jamesbury Corp. v. Worcester Valve Co.*, 443 F.2d 205 (1st Cir. 1971).

[13]Annot., 61 A.L.R. 2d 356 (1958); Morris, Patent Rights in an Employee's Invention: The American Shop Right Rule and the English View, 75 L. Quar. Rev. 483 (1959).

[14]Koenig, op. cit. supra, note 1. The common law could possibly veer in the direction of more protection for the employed inventor. This could come about as a result of the current trend toward more protection of human rights or as a result of employed inventors pressing more insistently the alleged hardships suffered by them and the alleged threats to the public interest. Cf. *B. F. Goodrich Co. v. Wohlgemuth*, 192 N.E. 2d 99 (Ohio App. 1963).

[15]Forman, Patents—Their Ownership and Administration by the United States Government (1957); Maltby, A Government Patent Policy for Employee Inventions, 21 Fed. B.J. 127 (1961); Neumayer, op. cit. supra, note 1, chap. 5.

lowed by private industry, except for somewhat greater generosity in making *ex gratia* awards to inventors, in permitting them to retain foreign commercial rights, and sometimes in allowing them to retain domestic rights if the Government has no interest in the invention.

Our indisposition to legislate the respective rights of employer and employee, except where the Government is operating in a proprietary capacity, differs sharply from the State-awards (Inventor's certificate) program that exists in Russia, and the tendency—a growing one—in Europe and some other areas to subject the allocation of employer-employee rights in inventions to extensive legislative and administrative control.[16] A comparable approach is suggested for the United States in the Moss bill, H.R. 2370, discussed in the Kuntz article.[17]

3. *What kinds of stimuli and rewards?* The discussion up to this point has spoken almost exclusively in terms of *economic* awards. And for very good reason. This is where the controversy, at least the legal controversy, between employer and employee is most likely to arise. It is generally thought that economic rewards are the chief concern in the inventor's mind.[18] Whether or not this is so, it is the economic issues that are most likely to end in dispute, since other types of reward, such as recognition, prestige, etc., are likely either to involve no justiciable issue or to be susceptible to amicable settlement.[19] This economic emphasis should not, however, mislead us into ignoring other important forces that can operate to stimulate and direct the efforts of the inventor: the desire for prestige and both public and private recognition, the sense of accomplishment, the satisfaction one derives from solving a problem, the desire to be of service, the satisfaction of seeing one's brain child put to use, and various fringe benefits (usually, but not always, with economic overtones) such as released time, titles and promotion, participation in conferences, etc.

[16]Neumeyer, The Law of Employed Inventors in Europe, Senate Judiciary Subcommittee on Patents, etc., Study No. 30 (1963); Schade, Employees' Inventions—Law and Practice in the Federal Republic of Germany, 11 Indus. Property 249 (1972); Schmied-Korwazik, Employee Inventions Under German Law, 54 J.P.O.S. 807 (1972); Employee as Inventor in Law and Practice, Bulletin of Intl. Fed. of Inventors Associations, June, September and December, 1971.

[17]Supra, p. 99, note 12.

[18]Davis, A Piece of the Action, Intl. Science & Tech., 12/63, p. 49; cf. Rossman, Industrial Creativity: The Psychology of the Inventor 152 (3rd ed. 1964), which places "financial gain" a fairly close third after "love of inventing" and "desire to improve." Dr. Rossman's inquiry, however, was directed to *both* employed and independent inventors.

[19]But see *Misani v. Ortho Pharmaceutical Corp.*, 198 A.2d 791 (App. Div. N.J. 1964), rvsd. 210 A.2d 609, cert. denied 382 U.S. 203 (1965). See also The Tempter (Random House, 1959), an interesting—and as far as I know, the only—novel by Norbert Wiener. See also Dudintsev (Bone translation), Not by Bread Alone (Dutton & Co., 1957).

Even within the broad economic and non-economic categories there may be great variations in terms of both the form of reward and the stimulus effect thereof. In economic terms, one inventor may prefer promotion and/or salary increase, another may prefer a "piece of the action" reflected in royalties and the like, a third may welcome a flat award, a fourth may be entrepreneurially-oriented and get his greatest satisfaction from the possession of patent rights. On the non-economic or semi-economic side, some of the 57 varieties of satisfaction have already been mentioned. Even here, the satisfaction may range all the way from the mere inclusion of the inventor's name[20] on a patent to a Nobel Prize or something comparable, and from recognition by one's peers, through recognition by one's superiors, to recognition by the public.

All these forms of stimuli, both economic and non-economic, do exist, but there are no legal or comparable forces that push our institutions, Governmental or private, into making use of any or all of them. The point is that there may be many different stimuli and rewards that may appeal differently to different individuals in different situations. But if there is a public interest in maximizing or influencing the direction of inventive activity, presumably we should be exploring the possible ways in which *all* these incentives can be used to the best advantage, and not content ourselves either with concentrating on one or two to the exclusion of others, or with assuming that employers (whether private or public), will inevitably do the wise thing and make the most of every opportunity.

There are not many impediments that stand in the way of our doing most of the things described above, if we really know what we want to do. The freedom of employers as employers to use any of the foregoing stimuli seems beyond debate. And this would presumably include the Government both as a direct employer and as an exerciser of control over the employee policies of a Government contractor.[21] Even in imposing requirements upon entirely independent employers, it would seem that Congress could draw upon the powers stemming from such Constitutional clauses as those relating to interstate and foreign commerce, patents, national security and de-

[20]See, for example, the provision of the Paris Convention, implemented by section 111 of the Patent Code, requiring that the inventor be named in the patent. Convention for the Protection of Industrial Property, Art. 4 ter (1883). Compare the recognition of a "moral right" in the copyright laws of many countries, not including the United States. Strauss, The Moral Right of the Author, Copyright Office Study No. 4 (1959). Compare also the proposal for an "inventor recognition" program under the auspices of the U.S. Government. See President Nixon's Message to Congress on Science and Technology, March 16, 1972.

[21]Cf. Walsh-Healey Act, 41 U.S. Code sec. 35-45; *Perkins v. Lukens Steel Co.*, 310 U.S. 113 (1940).

fense, and the general welfare, to venture considerable distance into this field—if it knows what it wants.[22]

4. *What do we want?* Just what is it, in terms of the public interest, that we really want to accomplish with our employee policy? The answer you get will depend upon whom you ask. (a) To some, the answer is neutral: they would view inventive activity as a matter of purely private concern comparable, let us say, to creating advertising copy or new fashions in clothes. (b) To others, the answer is negative: they would welcome a reduction in inventive and innovative activity irrespective of the results. (c) To still others, the answer is positive: continue to press forward, in the future as we have done in the past, with the inventive-innovative effort.

Members of the first school would presumably treat with indifference the issues that confront us here. Leave the whole thing to private initiative. Let the employer and employee solve their own problems; whether they do so wisely or foolishly is of no public concern. There are undoubtedly many who see the picture this way, and certainly many who *act* as if this were the situation. Those who see the issue in negative terms, and the number may be increasing,[23] think a moratorium is in order. This attitude is not necessarily limited to the avant-garde. There is some suggestion that at least some industrialists welcome invention and innovation with about the same enthusiasm they would show toward an impending strike or price controls, and accept it only because of their fear of competition.[24] Most of us, I would guess, approach the issue positively, but with varying reservations. We would seek a society that both inspires a maximal inventiveness *and* seeks to assure that such inventiveness takes the most desirable directions.[25]

None of these approaches is as simple, as black and white, as the mere statement of them would suggest, the last one least of all. Most of us, I suppose, would reject the ukase to go forth, blindly and mindlessly, and subdue (some would read it "seduce") nature without regard to how or why or with what effect. But assuming a sensible, meaningful direction and goal, maximization of invention

[22]Cf. the extensive laws and regulations relating to other "public welfare" areas: labor, environment, product safety, health, etc.

[23]At least, they are becoming more articulate. See Roszak, Where the Wasteland Ends (Doubleday, 1972); Ellul, The Technological Society (Knopf, 1965). Cf. Toffler, Future Shock (Random House, 1970); Mumford, The Myth of the Machine (Harcourt, Brace, 1967, 1970); Dubos, A God Within (Scribners, 1972).

[24]Cf. Walton, The Inventor and the Company, Innovation, No. Four, 36 (1969).

[25]Were we not of this view, I would not find this article worth writing, you would not find it worth reading, and the Government would repeal the patent laws and cut off forthwith (by legislation or impoundment) all public funds for R & D other than those needed for its own immediate purposes.

would seem a worthy and defensible objective. This connotes getting the most out of those whose job it is to invent. It connotes more and better results from those to whom invention is a sideline—provided the stimulus does not deflect them from their primary responsibilities or prevent direction of their talents into more useful channels. And it connotes tapping the unrealized latent forces of creativity that presumably abound in our social organization and individual make-ups.[26]

Maximization, of course, is not enough. *Direction* is just as important—if anything, more important. Two strong objections to this suggestion at once come to mind: One, you cannot "blueprint" invention and creation. Two, in our system, direction is provided by the economic forces of utility, not by central planning. Both are true in a large measure, but not entirely so. Granted that many of the truly great contributions to society have come from following one's own nose, from efforts to satisfy one's curiousity, from exploration for exploration's sake, the fact remains that probably most of our research and inventive effort is carried on with certain aims, objectives, goals in mind—and the results from a social standpoint can usually be no better than the aims.[27] So, to the extent that we *do* plan, it behooves us to plan well— "technology assessment," to put it in today's terminology. Nor, as an affluent society—and probably to our misfortune, it is to *that* society that an over-share of invention and innovation has been directed—can one rely as confidently on economic forces to supply the proper direction as one can in a society of scarcity and genuine need. To appreciate this, one need look only to the conspicuous consumption (as Veblen called it) that permeates substantial segments of our society, the contrived inefficiency that appears in various guises, the failure to "internalize" the full costs of a product (again, to use today's terminology), the disregard for the needs of vast segments of society, and the tremendous effort that goes into destructive rather than constructive invention and innovation. In short, future inventive activity *does* call for more careful attention to the direction it takes, by whatever means this is achieved, than it has heretofore received. Otherwise, we run the risk of developing a mass of trivia, junk—and worse, affirmatively evil innovations—that can only have the effect of seriously misallocating our resources, both material and human, and of discrediting the invention and innovation process.[28]

[26]In seeking these objectives, of course, one must avoid the danger of *over*-stimulus, e.g., diverting the subject from primary responsibilities or more useful activities, or seducing him with false hopes and expectations that cannot be realized.

[27]Except for the possibility of unexpected fall-out (which can work for either good or evil) or the phenomenon of serendipity (which, by definition, works only for good).

[28]As, indeed, the alleged misdirection has already done in the eyes of some. See note 23, supra.

5. *How do we get what we want from the inventors?* Previous discussion (section 3) explored the possible stimuli and motivating forces that may drive the inventor to invent. That discussion need not be repeated here, but two additional points should be made. First, there is usually a correlation between the *stimuli* that affect the inventor and the *direction* that invention takes. Second, it is not enough to talk about what motivates the inventor; we must also consider what motivates the innovator.

On the first point, it was observed that the primary motivation behind the inventor's activity is economic, i.e., the hope of making money out of his invention. At the same time, it was recognized that he *may* be influenced by other factors: desire for prestige, a sense of accomplishment, public service, etc. The emphasis upon economic gain is understandable. In our free enterprise, private-property society, the "economic man" has traditionally prevailed. The patent system, constituting historically the main driving force behind inventive activity, is keyed to the money-making concept; i.e., it gives the inventor a limited monopoly that can be translated into greater economic gain that would result if he were subjected to competition. The predominant orientation of the invention and innovation process, except for aspects of the Government's role therein, has been in terms of economic gain.

This may change. Many of today's younger generation are less strongly economic-oriented than in the past. Perhaps even more significantly, possible changes in the *direction* of invention, discussed in the preceding section, would be likely to skew the underlying motivations. To the extent that inventive effort is directed to an attack on health problems, for instance, it will presumably attract to it public-service-oriented-inventors who might be quite uninterested in developing an improved hair-dryer. Even the economic-oriented inventor might well find himself influenced by other stimuli to the extent that other results than making money became more meaningful. At this stage, one can only speculate on these matters. The important thing is to recognize that in developing appropriate *incentives* for invention, we can no more afford to become prisoners of the past than we can in pursuing the inventive process itself. The maximization of inventive activity demands that we make the most of *all* the available stimuli, not just some of them.

On the second point, the discussion up to now has seemed to suggest that the *only* contributor to the invention and innovation process is the inventor, the man who comes up with the idea. As we all know, this is not true. There is the little matter of getting the bright idea from the drawing board to the drawing room. In some cases,

this may be fairly easy and inexpensive. In other cases—in most cases, some believe[29]—the innovation and diffusion process may be very difficult and expensive. Thus, we inject a new factor into the problem: how to allocate the reward (upon which the stimulus is bottomed) where there are multiple contributors? We turn to this next.

6. *How to determine and evaluate the inventor's contribution?* If a "stimulus-reward" system is to work satisfactorily, credit must be given where credit is due.[30] Otherwise, we foster dissension and resentment, over-stimulate those that we over-reward and under-stimulate those that we under-reward. In short, we create a serious misallocation of inventive-innovative resources and defeat the whole purpose.

This is hardly the place to comment on the overall invention-innovation-diffusion process, other than to state the obvious, that it is a long and complex process in which the act of invention plays an indispensable, but still only one part out of many. In-puts run the gamut from the whole range of experiments, contributions and often significant non-contributions of the past; through the inventive idea itself to which others than the putative inventor may contribute in various ways; through the sometimes grubby but important business of experimenting, modifying and improving; through the organizational, advisory and facilities-supplying contributions of the employer; and finally, to the complex, time-consuming, costly market testing and marketing processes.

Any attempt to apportion credit and allocate reward with any accuracy in such situations may be a sheer exercise in futility, except in relatively simple situations. The problem with respect to the inventor is further complicated when more than one "inventor" is involved—as may often be the case in cooperative or organizational research. And, of course, no single pattern evolves: the picture can change with every set of circumstances. Nevertheless, the public interest requires that we do the best we can in order to provide the environment that will be most conducive to stimulating invention and directing it into the most appropriate channels.[31]

[29]Report of Panel on Invention and Innovation, Technological Innovation: Its Environment and Management 8-10 (1967).

[30]Indeed, this is the issue around which the present controversy revolves: i.e., the contention that the contributing inventor is *not* receiving adequate credit and reward for the contribution he makes. See Kuntz, supra, p. 85.

[31]Defenders of a "hands-off" attitude would not dispute this. Rather, they would urge that the employer is the best judge of what is proper and that injecting others into the decision-making process or imposing mandatory rules upon the institution will do more harm than good.

The question is, who should do it? The employer? The employer-employee jointly, bargaining on an individual or union basis? A governmental body? Some neutral, outside group? And how should they do it? Through unilateral declaration? Negotiation and bargaining? Mediation or arbitration? Formal hearings?

I have no answers. One may, however, suggest certain general approaches, so obvious as to border on the banal. (a) Obviously, decision should rest with persons or bodies sufficiently skilled and sophisticated that they can grasp and deal competently with both the details of the situation and the broader implications (such as those I have been discussing) that are involved. (b) There should be full opportunity to introduce all the relevant data and considerations, not only to assure that those who decide have what they need to make the decisions, but also to satisfy those who may be unhappy with the decision that they have been given a hearing—due process, if you will—and treated fairly. (c) Insofar as possible, those who contribute to the invention-innovation process — inventors and others as well—should be given recognition in proportion to their contributions, rather than one or two contributors being singled out and the others ignored. The broader the base of recognition and reward, the greater, presumably, the magnitude and breadth of incentive and stimulus. A modest contributor to whom the Nobel Prize is irrelevant may be stirred to action by an award system.[32]

One must make concessions to administrability, of course. A theoretically desirable procedure may have to be modified in the interests of practicality. Nevertheless, the approaches suggested here should be useful as general guides and given consideration as such. One suspects that they are widely ignored.

7. *What kinds of rewards are appropriate?* In the light of the allocation problems just posed, we return again to the nature of the stimulus or award. (Somehow or other, the discussion keeps coming back to this). Rewards that may be appropriate in one situation may be inappropriate in another. Leaving patent rights with *the* inventor may be appropriate where the employer contributes little or nothing, and the invention is unrelated to his business. It may be quite inappropriate where his input is substantial or where an assignment of the patent to a competitor might prove severely damaging. An award of patent rights to a contributor may be appropriate if the contribution is major, but not if it is minor. Perhaps

[32]See, e.g., the program described by Bowes, supra p. 119. There is, of course, nothing inconsistent in taking this approach and at the same time continuing to provide major awards for major contributions. The point, if I may belabor it again, is to tap *all* the talents, not just some of them.

all that can be said here is (1) that many alternative stimuli and rewards are available for use,[33] and (2) that, in general, these alternatives are not mutually exclusive—they can and should be used or not, separately or in combination, as the circumstances dictate.

8. *Who should provide the stimulus and reward?* The final substantive question is: Assuming inventors and potential inventors should be rewarded both as a matter of equity and as a stimulus to work harder to invent, who should pick up the tab? Should the employee subsidize his own efforts? Should his employer pay? The user-beneficiary of the inventive idea? The general public acting through its Government?

At the outset, recognize that some of the reward-stimuli cost nothing or next to nothing, at least directly.[34] This would be true, for instance, of public recognition, plaques, publicity, titles and, to considerable extent, participation in conferences, opportunity for publication, some released time, etc.

Where costs are involved, however, the question gets a bit sticky. In one sense or another, all four may contribute to the cost, at times. The employee-inventor pays the cost, in terms of time and effort, to the extent that he makes an invention over and above his regular duties but receives nothing for it. The employer pays the cost to the extent that he contributes equipment or salaried time, operates under an award or other compensation policy, gives the employee a salary increase or special privileges, etc. The user-public contributes to the extent that added costs, or monopoly profits reaped either by the employer or employee through the exercise of patent or trade secret rights increase the price he must pay for the invention's product. The Government's contribution—and a substantial one it is—has thus far been limited to costs it assumes as employer (comparable to those assumed by a private employer) or a a contractor with an employer concern.[35]

Turning to the question, who *should* pay for the cost of invention,

[33]These could include, for instance: (1) With respect to patent rights, complete title in the inventor, a shop right in the employer, a shop right in the inventor, a reversion back in case of non-use. (2) In terms of monetary reward: salary increases, flat sum awards in varying amounts, and percentage payments based upon savings in production, profits on sales or income from licensing. (3) Fringe benefits: promotions, released time, special equipment, participation in conferences, titles, publicity, plaques, etc.

[34]Indirect or ultimate costs may result, however. Public recognition of an inventor's contribution, for instance, may add to his prestige, making it possible for him to command a higher salary.

[35]Current suggestions for substantial awards to significant inventors would represent a new departure and a move toward general *public* awards which would supplement (though in a small degree, proportionately speaking) the billions poured into direct subsidization of R & D. Note 2 on p. 145, supra.

presumably the *employee* should pay for those inventions from which he alone benefits, *except* to the extent that we decide as a matter of public policy that his efforts should be subsidized or stimulated by support from other sources.

The employer should, of course, pay for those inventions he has voluntarily agreed to pay for whether in the form of salary or special compensation. This, in fact, represents pretty much both the minimum and the maximum obligation that the employer assumes today under our existing law.[36] As a matter of equity and fairness, an employer could properly be required to compensate employees on a quantum merit basis and for inventive activity undertaken beyond the employee's duties where the benefits accrue to the employer. Laws of many countries, as noted above, so provide and the presently pending Moss bill would introduce such a program in this country.[37] Additionally, although this is a closer question, where an employer suppresses an employee's invention he might be required either to pay for it or return it to the employee. Beyond these, one is hard put to justify imposing any obligation upon the employer in this area. The employer is not, after all, in business to provide the employee with an easy life. Nor does he have a responsibility to promote the "public interest" except as he assumes that task voluntarily or as his private-interest-oriented efforts contribute thereto. In any event, any such Governmentally-imposed obligation, quite aside from its doubtful constitutionality, would almost inevitably prove to be self-defeating in the long run.[38]

The reasonableness of asking the consuming public to pay, we can pass over. Except where the Government has decided that the general public should foot the bill through the taxation process, the ultimate cost does fall upon the beneficiary. There seems no reason why it should be otherwise.[39]

The pros and cons surrounding Government support for inventive activity by employee inventors, other than its own, are more complicated. Given the Government's infinite capacity for messing things up, one shudders at the prospect of a general broad-based program in this area. There are, however, two areas in which such

[36]The only qualifications of this doctrine are those rare instances previously discussed in which courts refuse to enforce employer-employee contracts because of objectionable provisions. See note 10, supra.

[37]See Kuntz, note 12 on p. 99 and notes 16 and 17, supra.

[38]What the Government may require in the form of *contractual* obligations is a horse of another color.

[39]A rather intricate "public interest" argument can be made for general subsidization of new products irrespective of their nature or the status of those who benefit, but I will not go into it here.

a program would seem warranted: (a) Much could be done to provide cost-free, or virtually cost-free, stimuli and encouragement to inventors through support for inventors' awards (*including* award programs directed to the recognition of meritorious *privately*-employed inventors), inventor's fairs, publicity, advisory assistance, etc.[40] (b) In those areas involving a strong public interest in technological solutions (environment, pollution, automobile safety, education, noise, mail distribution, communication, etc.), it could provide special incentives, extending to both employed and independent inventors. The relative merits of such a program compared to (1) direct subsidization and (2) pushing industry into such activity by means of legislation and regulation, lies beyond the scope of the present discussion.

9. *How do we get the answers?* I have made good on my promise to ask questions, not answer them. The area abounds with unanswered questions, and I trust that the foregoing discussion makes it clear why this is so. The final matter is: How *do* we get answers?

One hesitates to propose that traditional ploy used by the apostles of inaction: further study and exploration. Yet, one is hard put to suggest alternatives. The traditional argument for the status quo, "Mother (translate: 'Ma Bell') knows best" has probably played itself out. The alternative, "Damn the torpedoes, full steam ahead," seems equally unsatisfactory absent more knowledge than we presently possess about the forces at work here. Anyway, we have gone along for decades making decisions without too much awareness of what we were doing. Perhaps we can afford the luxury of waiting a little longer, *provided* we use the breathing spell to learn some things we do not know now.

Four possibilities suggest themselves:

(a) The courts, which have often let their reverence for precedent and freedom of contract lead them into unfortunately uncritical determinations, could profitably, if belatedly, begin to give a hard look at the realities involved in these employer-employee controversies, especially the "equality of bargaining power" and the "public interest" aspects.

[40]Some of these activities are already in being. See Final Report to Pennsylvania Science and Engineering Foundation on the Regional Development Laboratory (12/70)—this Laboratory provided working facilities and assistance to independent inventors; H. J. Res. 1232, 92d Cong. proclaiming Feb. 11, 1973, "National Inventors' Day, A.A.I.I., ACTION, Mar. 1973; and Government support for local "inventor's fairs," Office of Invention & Innovation, "Developing a State Invention Exposition" (Natl. Bur. of Standards, U.S. Dept. of Commerce, 1966). These activities could be greatly broadened. Cf. the Office of Technical Services program which expired in 1969. See State Technical Services: Congress Swings the Axe, 166 Science 1606 (Dec. 26, 1969).

(b) There are wide opportunities for research on the subject and no lack of institutions to conduct it—institutions that are especially qualified for the job because of their active interest and experience in the area as a result of their own employer-employee relationships. There come to mind numerous Government agencies such as NSF, DOD, NASA, Agriculture, Commerce, etc.; both employer associations (e.g., N.A.M.) and employee groups such as labor unions and professional societies (e.g., American Chemical Society); research institutes, both profit and non-profit (such as Denver Research Institute, Battelle, Arthur D. Little, etc.); educational institutions and foundations, and so on.

(c) The matter could, and should, receive attention from various Committees of Congress, including the Judiciary (to which the Moss bill has been assigned), Labor, Commerce, Joint Economic Committee, Subcommittee on Patents, Trademarks and Copyright, Science and Astronautics, etc.

(d) Finally, it would seem imperative, in view of the importance of the issue and the sad lack of hard knowledge concerning it, that some of these agencies, thoroughly qualified to explore the matter and less restricted than the private corporations by profit considerations,[41] experiment with various practices and incentives using their own activities as experimental subjects. Research-oriented Government agencies, for instance, could and should undertake various experiments within their own laboratories and insist that their private contractors do so as well. The same may be said of many universities.[42]

All in all, we really had better get on with the business of finding out more than we now know, and then reexamine our present policies in the light of our acquired knowledge. We have put it off long enough.

[41] This is not to suggest that all corporations would, or should, eschew such research into methods and policies. One could name several whose economic position would permit them to undertake such explorations and whose extensive R & D activities and general public outlook qualifies them to do so.

[42] It is an interesting phenomenon that universities and other research-oriented institutions will eagerly seek out *other* subjects to experiment upon, but rarely are inclined to experiment upon themselves.

DR. HANS SCHADE



Dr. Hans Schade has been associated for some time with the topic of employed inventors since he was the Chairman from 1957 to 1971 of the Arbitration Board within the German Patent Office dealing with the many cases arising under the German law on employee's inventions. A Doctor of Law and a Judge, Dr. Schade was until recently the Senate President of the German Patent Court and he is also the co-author of the definitive Reimer-Schade-Schippel treatise on the rights of employed inventors.

THE WORKING OF THE LAW ON EMPLOYEES' INVENTIONS IN THE FEDERAL REPUBLIC OF GERMANY

BY

DR. HANS SCHADE

I. Introduction

Under classic patent laws, the right to a patent belongs to the inventor. Even if the inventor's name is mentioned in the printed patent, the real owner of the rights based on the patent is in most cases the inventor's employer. This is a result of the economic and technological development of modern society. Individual work is increasingly giving away to cooperative efforts; the financial resources required for inventors have become too burdensome for individuals. Therefore most inventions originate in industry where the inventors are employed. It is estimated that 80 to 90 percent of all inventions are made by employed inventors.

The question of whether an employer is entitled to an industrial property right based on an employees' invention—and if so, why, to what extent and with what consequences—has received a large variety of answers. From a legal point of view, they are influenced by two different fields of law; under the basic principles of labor law, the fruits of the labor belong to the employer; under patent law, they belong to the inventor, as an exclusive right.

Nevertheless, the practical solution adopted throughout the world, emphasizes the employer who is entitled to the industrial property right.

The purpose of this paper is to discuss briefly the German Law on Employees' Inventions of the Federal Republic of Germany[1] and

[1] 11 Industrial Property 26 (Sept. 1972). Published by WIPO in Geneva, Switzerland. The substance of the law can be summarized as follows: It covers practically all persons under employment contracts, including civil servants and members of the armed forces, and their inventions during employment. In principle, the employer may claim all "service" inventions (i.e. inventions resulting from, or attributable to, the employees' ordinary line of duty) in exchange for a "fair compensation". In respect of "free inventions" (i.e. inventions outside the employees' work), the employer must be offered at least a non-exclusive license.

"Fair compensation" is determined by agreement between the parties (if necessary, by arbitration or court decision) and takes into account factors such as the employees' position, the importance of the invention for the employer, the employer's contribution to the making of the invention by providing research facilities, resources, etc., and the difficulties encountered during the inventive activity.

Agreements between employer and employee on inventions are admissible, but the employees' rights under the law cannot be restricted by agreement. Also, any agreements that are "grossly inequitable" may be invalidated by either party.

particularly the right of the employed inventor to reasonable compensation as well as the operation of the law in general.

II. Historical remarks

Going as far back as 1920, some collective bargaining agreements concluded in the Chemical industry have already regulated the relations between enterprises and their employees; they established that under certain circumstances the right of the employed inventor to reasonable compensation. In 1936, the the German Patent Law was changed to introduce the *inventor's principle* replacing the so called *applicant's principle*. During the war, in 1942 and 1943, two government Decrees regulated this matter for the first time by law. These rules were in force until the new law was enacted in 1957. This law charged the Patent Office to name the inventor on the patent and to provide indicia as to the manner the invention has been transferred to the applicant. Although the law included provisions on the compensation of an employee's invention, some sectors of industry have not always followed the law, even though the German courts have confirmed their validity.

III. "Mandatory applicability"

Compared to U.S. law, the German one shows a fundamental difference in the rule of "mandatory applicability". The provisions of the Law may not be modified by contract to the detriment of the employee and agreements are permissible only after the service invention has been reported. This means, for example, that an employment contract cannot provide for all inventions to pass to the employer. It is necessary that in each case the employer claims the invention *after* a report has been made of it by the employee. Before such a report it is not possible to provide in a contract that compensation for inventions is not to be paid or that it is included in the inventor's regular salary. Such agreements are invalid and legally unenforceable. This provision which is in keeping with customary labor law in Germany, shows that it is the intent of the statute to protect the socially weaker partner. The inflexibility of such a law is, however, alleviated somewhat by the fact that agreements are possible *after* the invention has been reported; nevertheless they require specific approval by the employee.

IV. Assignment of the Application

Only a few remarks are necessary about the legal status of the invention made by the employee.

It is generally clear that a service invention, as contrasted to a free or independent invention—can only be one which is associated in

a specific way with the enterprise. Under German law, service inventions are those made during the terms of employment, which either result from the employees' area of work in the enterprise or is essentially based upon the experience or activities of the enterprise. In practice there are no difficulties with inventions evolved from research and development by engineers, chemists, etc. It is rather the borderline cases, which occasionally present difficulties, for example inventions made by a salesman, entrusted with market research or a business manager.

Under the law, the employer is under a duty to apply for all domestic and foreign industrial property protection. If he does not wish to acquire any portion of such rights, he shall release the service invention, however, it should be pointed out that this happens very infrequently.

This system operates well in large enterprises, but it must be conceded that medium or small size firms do not always act in accordance with these rules. The Arbitration Board, operating within the German Patent Office to settle disputes between employers and employees', has tried not to be unrealistic and has in some cases assumed an express or implied assignment of rights after a report of the invention.

V. Reasonable Compensation

The pivotal feature of the Law is the employer's obligation to compensate the employed inventor. Its purpose is to provide the inventor with a fair return based on the benefit to the employer in being able to obtain an industrial property right. This is the true basis for the idea of compensating the employed inventor and there lies the essential difference between the activities of the inventor and all the other employees working together with the inventor in the complex "innovation machinery". It is the inventor solely whose activity lays the foundation for a concrete individual right, the patent. No one amongst his colleagues does so, neither in management, nor in production or marketing, though their work is essential for utilizing the invention. Not only German doctrine, but also international views, emphasize the close connection between the grant of an industrial property right and the compensation of the employed inventor.

There is a second aspect to the above. Only an employee who has creative ingenuity can be an inventor. An employee cannot commit himself to inventing because this would be contrary to the essence of invention. Consequently, invention is not a normal result of employment.

There are two fundamental factors involved: (1) the basic condition is that the employed inventor provides the employer the opportunity to obtain a patent and (2) the personal contribution of the inventor to decide the amount of the compensation.

In assessing the quantum of compensation, due consideration is given in particular to the commercial applicability of the service invention, the duties and position of the employee in the enterprise, and the enterprise's contribution to the invention.

The Directives on Compensation suggest methods for determining the amount of compensation. Initially it is necessary to determine what an independent inventor would have received for the sale or use of a similar free (non-service) invention. In practice this requires a determination of the terms of contracts of this nature, particularly license agreements, concluded between different companies. . . The Directives have called this the "invention value".

It is not always easy to determine this invention value. The Directives describe some methods and give many indications of how to attain this aim. But before entering into detail, it is necessary to mention the second essential point of view to be taken into consideration.

According to the Rules, the employed inventor receives only a portion of the value of the invention. In arriving at his share, the Rules take into consideration the fact that compared to the independent inventor, the employed inventor is paid by the employer, that he is working with materials and equipment provided by his employer, that he does not participate in the costs and risks during the development. The Rules suggest a rating system. The amount of the inventor's share depends on the extent of his own initiative in posing the problem and in reaching a solution thereto.

Another factor to be considered is the position and duties of the inventor in the enterprise. The higher his position, the lower his share of compensation. In most cases the inventor's share lies roughly between 15 and 20 percent of the amount which would be paid to an independent inventor or licensor. This shows that the contribution of the enterprise is valued from 80 to 85 percent.

But let us return for a moment to the "value of the invention." The Rules provide three different methods of determining this value: (a) by license analogy, (b) by the measurable benefit to the enterprise and, (c) if these methods are of little use, a reasonable estimate.

The system most frequently applied for determining the value of an invention is by the license analogy system. Under this method, an invention's value is ascertained on the basis of the royalty rate customarly paid on free inventions. It must be conceded that some experience is necessary to arrive at a comparable royalty rate, for example 3-5 percent of the value of a new machine, 5 percent on a particular drug, 1-5 percent on a new electronic device, or perhaps 0.3 percent on a radio. In general, it is easier to determine this than the measurable benefit to the enterprise, since general overhead, taxes and profits need in particular, also to be considered. Last but not least, the employer is not always anxious to have his employee know all these details.

Employing the method of license analogy solves another problem. Many inventions do not result in a completely new product, or a novel machine, unique process or perhaps a process for preparing a new plastic, but only improves an existing product or process. The Arbitration Board has considered such aspects many times. It appears to be quite plain that calculating the invention value can produce two quite different results, depending upon whether the license is calculated on the basis of the value of the total device as a "unit of reference", or only a portion thereof.

The decision then depends on whether the whole device obtains another character; whether the invention gives the machine the "characterizing impression", a notion of the German Federal Court of Justice in which case the whole device is a unit of reference for royalty purposes or whether only a single part has been improved. In the latter case, only the value of that part is the unit of reference.

VI. General

It is not easy to give an adequate survey of the German Law and its workings in a few pages.[2] In the last analysis, the value of a Law is not determined by theory, but by the extent to which it prevails in industry, i.e. whether it proves to be a useful tool, whether it results in more or less friction or whether its "social partners" react with enthusiasm or criticism.

One can easily gain the impression now that the whole matter is rather complicated. It must be conceded that this impression is not always incorrect. It is frequently necessary to look at many aspects in order to arrive at a reasonable compensation figure for the employed inventor.

In Germany we are convinced that the effects of the law have been

[2]For further details see Schade, 11 Industrial Property 249 (Sept. 1972).

beneficial, although there are still inventors today, who do not take advantage of their rights under the law.

The law's effectiveness can be seen in that so far, the Arbitration Board in Munich received about 1,000 cases. But this is only a small fraction of the thousands of instances of compensation paid employees year after year. There are instances of firms paying about a million marks per year, without ever bringing a single case *before* the Arbitration Board or a Court.

It may be appropriate here to say a few words about this Arbitration Board. It has a legally qualified chairman, assisted by two members with a technical background, selected from amongst Patent Office Examiners and appointed for each case by the President of the Office. It cannot render a binding decision, but only a settlement proposal. In about 70 percent of all the cases brought to an end with a proposal or a compromise among the parties, the procedure ended with an "amicable settlement". Proceedings before the Arbitration Board are entirely free from cost to the parties. The Board has published more than 50 proposals in the Official Gazette of the Patent Office.

In many cases, hundreds or even thousands of marks have been paid to employed inventors for service inventions used by industry. For successful inventions, these amounts may be 100,000 marks and even more. But this is no burden for industry compared with the salaries or the amounts spent for social security and taxes. It may be also added that compensation for service inventions enjoy a 50 percent tax exemption.

VII. Conclusions

Certainly, the Law may cause difficulties to the patent departments of industry, and the complexity of the matter may bring some troubles. But German industry has overcome these difficulties. One may believe that it is much more important that the qualified employee benefit from his invention and this incentive increases his interest in his work.

The law allows a realistic approach to assessing compensation; it provides that insignificant invention, made only for the purpose of receiving compensation, are to be granted a small payment or none at all. In this way, the Law, prevents jealousy and hard feelings among colleagues. There is no indication that the provisions of the Law are a handicap to team-work, while all co-inventors are participating in the compensation. The prevailing opinion in industry and the labor unions of the Federal Republic of Germany appears to be that the Law on Employees' Inventions does function satisfactorily and contributes toward social peace.

DR. P. C. HENRIQUEZ



Dr. P. C. Henriquez was born on the island of Curacao in the Netherlands Antilles. He was graduated as a chemical engineer from the Technical University of Delft, Holland, after which he participated in R & D work for a few years, obtained his doctor's degree in 1935 and from 1937-1942 he served as an Examiner at the Dutch Patent Office. Passing the examination for patent agent he next became head of the patent department of Noury & van der Lande, a medium-sized Dutch company with branches in several foreign countries. In 1948, he returned to his native country and temporarily abandoning his profession of patent agent, served as director for development planning of the Netherlands Antilles. In 1962, again taking up his old profession, he joined the Patent Department of Unilever N.V. in Rotterdam, where after a few years he was appointed head of the department. He retired in 1971 and is now an independent patent agent, acting as a consultant for various medium-sized companies.

INVENTORS' REWARD: MYTH AND REALITY

BY

DR. P. C. HENRIQUEZ

My task

Having been rather intimately acquainted with the practical workings of the German law on inventors' reward[1], I have been asked for my views. This is not surprising since any discussion of employed inventors' rights will at some point touch on or at least resemble to a certain extent the German law.[2]

This is how I see my task: first to dissipate the semantic clouds in which discussions about the subject are shrouded; secondly, to explode the layman's myth which underlies the notion of invention; and thirdly to enumerate the practical consequences of the law as they have manifested themselves in Germany.

Setting the record straight

Before starting: let me set the record straight. I am not arguing here against any kind of reward system *voluntarily* instituted by companies according to whatever criteria they may deem appropriate; be it for inventors, or for any other group; admen, slogan writers, errand boys, accountants or beautiful secretaries. I am not even arguing here against a reward system meticulously *prescribed by law* which rewards the outstanding performance of all employees or even rewards all employees who do no more than just what they are hired and paid to do. In fact, I do not need to do so: the impracticability of this is too glaring; such a law would be considered by almost anyone to fly in the face of common sense.

But what I am indeed arguing against is a legislative, highly formalistic straight-jacket which arbitrarily singles out one particular category of employees out of the many who contribute to the success of an enterprise and who do no more than what they are expected to and are paid to do. I am against it not only out of an ingrained proclivity towards equity, but because of the nefarious consequences such a law has been shown to have.

From the foregoing, it follows that I do not see any serious objections against a law which rewards an employee when he makes an

[1] *Arbeitnehmererfindergesetz*, generally known as *Erfindervergütunggesetz*.
[2] See footnote 1 in Schade article, p. 160, supra.

Figure I
"INNOVATION MACHINERY"

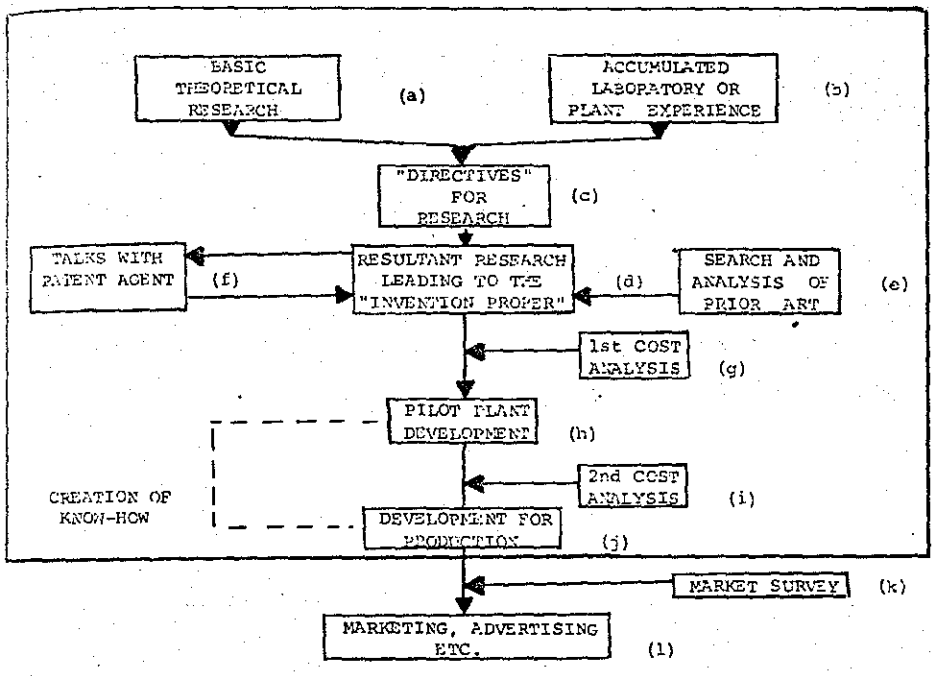
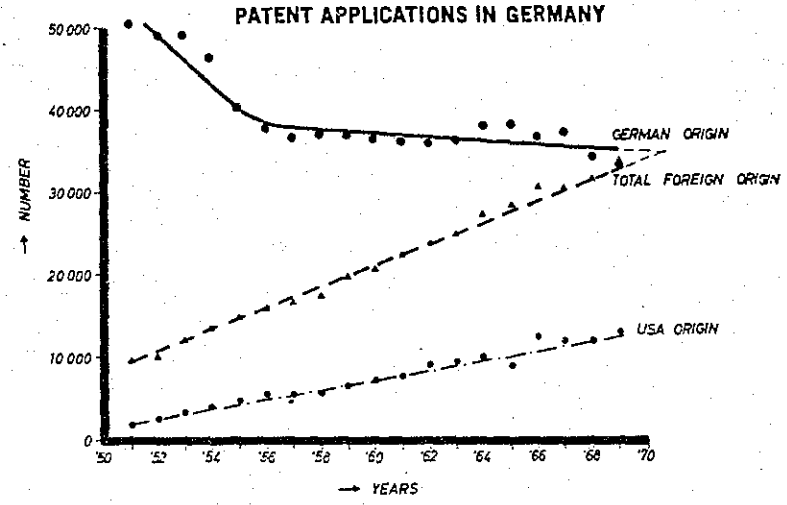


Figure II
PATENT APPLICATIONS IN GERMANY



invention within the realm of his company's activities, but beyond the normal tasks assigned to him.

Nor do I have any objections against a simple paragraph as e.g. in the Dutch patent law whereby the inventor, *even when he is employed to do research work which normally may lead to the invention at issue,* may claim an extra reward when there is a glaring discrepancy between the value of the invention and his salary.

Semantic clouds

In defense of statutorily decreed awards, some may argue that the spirit of the laws as originally conceived confer to "the inventor" an unalienable right for every invention and that it is contrary to the interest of the inventor to forfeit by contract, rewards for future inventions. Even if this were true—and many will deny it—that does not absolve us from the duty of investigating what the legislator originally had in mind when speaking of "the inventor". Existing laws in Western countries protecting "the inventor" are generally of a venerable age. "The inventor" at that time was normally the independent inventor. Practically the whole process of innovation depended on him.

Today the process of innovation has for a large part been institutionalized.[3] Many companies have integrated a complex "innovation machinery" into their make up (see diagram). In this machinery the inventor proper plays only one role amidst many others ("d" in the diagram). He is the man who takes the *first* steps *beyond* the prior art. Others play a role in furnishing him with the basic information he needs, properly analyzed and arranged within the prior art, giving him directions or inspiring him. Still others take the many more steps beyond the prior art in the "pilot plant" and "scaling up" stage, before the invention is workable (creation of know-how).

All this goes to say that "the inventor" of yore upon whom the old patent laws were modeled can be equated with the independent inventor of today, but by no means with *the employed inventor, who is merely a cog in the complex innovation machinery.* Ignoring this would simply be sloppy semantics. It is thus obvious that what should be protected and stimulated at the present time by the patent law are the "independent inventor" and the "innovation

[3]It is interesting to note that in the parliamentary discussions preceding the promulgation of the Dutch Patent Law at one point, the responsible minister remarked: "Of course you cannot hire someone and ask "please invent something for me"." This is at least partial proof that as late as 1912, the idea of "institutionalized innovation" was far from commonplace.

machinery" of enterprise.[4] This means that patent law, with regard to enterprises, should have the function of inducing to set up and maintain well organized R & D facilities with all their appurtenances.

A contagious law

The German law on employees reward of 1957 may have a contagious effect. Those who want a similar law introduced in other countries, point to the fact that German industrial patent agents (though privately complaining about the law being a constant pain in the neck and when more or less officially queried fall silent about its nefarious consequences) are not objecting particularly to the system. How right they are! Human nature being what it is, the German employed inventors, having had a prerogative conferred upon them, in a certain way exalting their status above that of fellow employees, are loath to relinquish it and would understandably brand the all-too-frank patent agent "an enemy of the inventor".

What do the statistics show?

Industrialized Western countries have to face the rather disappointing fact that for the past few decades sharply increased R & D efforts (including the increasing numbers of R & D workers and increasing R & D expenditures) did not result in an increased number of patent applications. Thus on a per unit basis there has been a steady decline in results. Some have hailed the German law on inventor's reward as a means of restoring the apparently flagging powers of the R & D worker and the (inflation corrected) R & D dollar. This expectation simply is not matched by the facts, if we look at the German experience. For this I refer to the graph in Figure II. It is seen that after a "hump" in this graph (before the promulgation of the law in 1957!), due to the backlog in the postwar years, the number of patent applications remains practically constant as years go by around 38,000[5] just as in the other Western countries, without such a law.

The fact that it is quite different forces that are at work is apparent from Figures III & IV. From the graph for Holland we see a sudden *doubling* of the number of patent applications after the war, this

[4]The employed inventor not specifically hired to do inventing, is of course to be equated with the independent inventor, when his invention lies beyond the realm of the company's activities. However, when his invention lies within the realm of the company's activities, see the remark above under the heading "Setting the record straight".

[5]It is interesting to note that before World War II (statistics of 1926-1937), the number of national patent applications hovered around 50,000 per year!

Figure III
NATIONAL PATENT APPLICATIONS IN HOLLAND

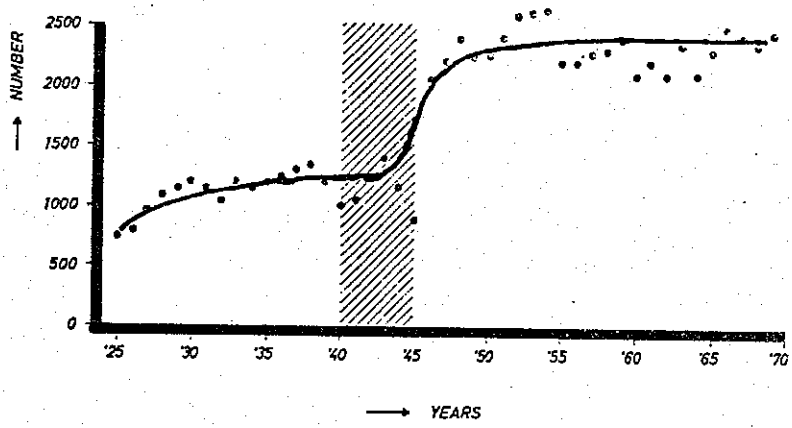
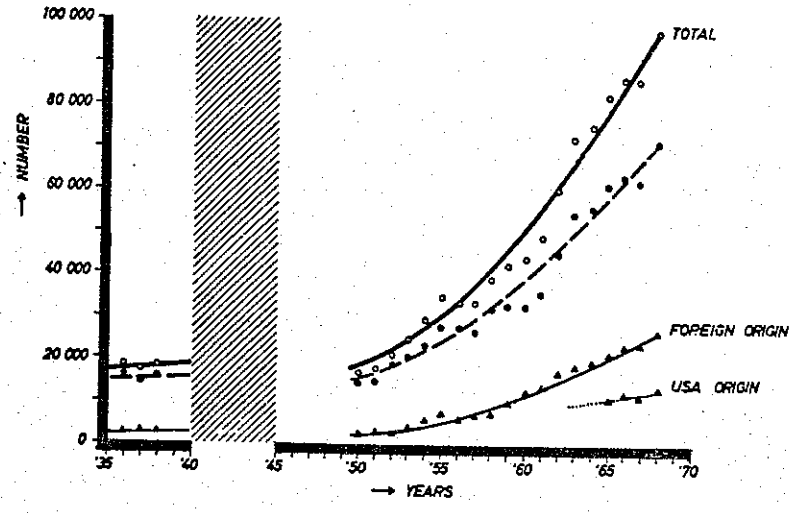


Figure IV
PATENT APPLICATIONS IN JAPAN



number thereafter remaining constant. In the last figure, we see the explosive growth of the number of national patent applications in Japan. It would be most interesting to analyze all these phenomena, but this is neither the time nor the place.

The Myth

When we single out step (d) in the diagram as something very special, that has to be treated in a unique way, then we are in fact underscoring and strengthening the layman's view of the inventor: a man walking in the clouds, now and then illuminated by *flashes of genius.*

Edison is credited with the aphorism that inventing is composed of 99% perspiration and 1% inspiration. But whatever percentage we reserve for inspiration, it is obvious that this part of the inventing process is much less likely to be stimulated—be it by reward or punishment—than perspiration. Now, important as human proclivity may be for hero worship, the patent system is not one of these institutions created to satiate it, bestowing glory on the inspired ones. It has the simple aim to stimulate technical creation and it is specifically the perspiration part of this creation—in its broadest sense—which can and therefore should be stimulated. This simple reasoning should be sufficient both to explode the "flash of genius" theory and to proscribe the setting apart of step (d) in the diagram as something to be treated in a very special way.

In fact, is not surrounding the head of the "inventor-cog" with a nimbus, while leaving the heads of all the other "cogs" in the innovation machinery unadorned, action tantamount to fostering the idea that inventing is normally something of rare inspirational nature so that high standards should be set for "inventive merit" as a prerequisite for validity?[6]

Summary of objections

1. The claim that a law on inventor's reward encourages invention, which is advanced as one of its principal justifications simply cannot be upheld in the face of practical experience. If a man is specifically employed to do research and development work which should normally produce inventions, his whole future career—his grade, promotion, salary and professional reputation depend on his success

[6]The U.S. Supreme Court seems to set such high standards. To quote Justice Jackson: "The only patent that is valid is one which this court has not been able to get its hands on". See also the bitter complaints of *v. Deusen* in Fortune, Dec. 1954, page 132 et seq. and *Rines*, 51 JPOS 501 (Aug. 1969).

in achieving the results that are expected of him. *This* is an incentive to genuine and serious inventive activity; indeed it is difficult to imagine a better one. *In fact as mentioned above, German patent statistics do not provide the slightest indication of the stimulating effect of the German law of 1957.*

2. Occasional extra rewards for specific outstanding achievements may in some circumstances be desirable, to boost morale or to celebrate a critical breakthrough, but this is equally true for all other categories of employees. Quite rightly, in no other case than that of research staffs has there been any attempt made to fix any reward or bonus by law.

3. Special rights for inventors which can be enforced by rigid legal regulation every time an improvement is found or claimed to have been found certainly acts as an incentive—an incentive to research staffs to be secretive while working out their ideas (thus seriously undermining team spirit in a laboratory) and an incentive to some research-workers to pester their employers with claims for "inventions" of tenuous, marginal, even non-existent inventive merit or commercial value. Small wonder, if it is also an incentive to firms considering setting up a research department to think twice before doing so.

4. This is not armchair theorizing—this is practical experience.

5. Under modern conditions a research department is a real "production plant" with a closely-knit team of workers producing inventions. The team includes many more employees than those who are conventionally regarded as "inventors". From the attached diagram it can be seen that a law providing special rewards for inventors constitutes an injustice to all the other people who co-operate among other things in:

(a) laying the foundation which make invention possible, including:

—research directors, group managers and section leaders, who by a judicious choice of the field in which research is to be done, by guiding and advising the research-workers and by generally organizing the research work properly, make a fundamental contribution to its success;

—the scientists doing basic research work;

(b) developing the invention to pilot plant and commercial plant

scale (this is often much more difficult than working the invention up to laboratory scale);

(c) "maturing" the invention to the point at which a good patent application can be filed: industrial patent agents, by sound advice, not infrequently manage to give the invention much wider scope than the inventor initially envisaged.

6. The law also constitutes an injustice to scores of other employees of the company, who deserve equal credit for the ultimate success of the invention, e.g. employees in the planning, production and marketing departments. There is no logic in singling out the link (d), in the diagram, for protection and reward by special legal provisions.

7. Experience in Germany has shown that the financial consequences of the law in question are insignificant for the firms, so that this does not offer any ground for opposition to the law. The nuisance value in other ways is however, very important and should be a warning to all other countries.

8. The financial benefits of the law for the scientific community engaged in research, *taken as a whole,* have proved to be negligible. But the law has created a labyrinth of bureaucracy by the complexity of the legal provisions which are necessary to disentangle the respective rights of employer and employee in order to calculate the reward for the latter, and particularly by the virtual impossibility of making the calculation on a realistic and objective basis.

Now, a further complication of the patent system is the last thing we need. Various prestigious economists already regard it as outmoded—too complex, if only because of the disquieting vagaries of case law. It is not the "big bad corporations" who are most vexed by this complexity, but the small and medium sized ones.

9. It has been observed that many research-workers develop a secretive attitude; the free flow of information is hampered and coordination of research work going on in different sections of the same laboratory or in different laboratories of the same company is made considerably more difficult than it is, even under favorable circumstances.

10. As already mentioned, there is increasing pressure to file patent applications for all kinds of petty findings, including many which are obvious when the prior art is taken into account. The company is obliged to file these applications against their own

better judgment and in doing so to misuse the Patent Office's time in having applications examined in order to prove that they are not patentable.

11. A research director is in danger of losing proper contact with further development in a certain field as soon as a research-worker claims to have made an invention in that field. In some cases, research-workers have refused to work in collaboration with colleagues in perfecting an invention, simply in order to avoid sharing a reward with them.

12. The freedom of the company to shape its own patent policy as it deems fit may be seriously impaired. The company, after all the investment it has poured into a research program should be free to judge which findings are worth patenting, at which stage of development of an invention a patent application should be filed, whether and how findings of one research-worker should be combined with findings of others, in what countries should applications be filed and where not, etc. Differences of opinion between inventors and the company employer on these points create strain and dissatisfaction.

13. Thus, quite apart from the question of the inventor's remuneration, there are powerful reasons why the employer should be the direct title holder of the invention and not derive his rights from the employee.

14. If the law relating to the remuneration of inventors is taken literally, basic research-workers, research directors, group managers, section leaders in the laboratory, those who develop know-how in the pilot plant and scaling-up stage, and even industrial patent agents should also in many cases be mentioned as inventors, which would result in awkward situations.

15. Manufacturing industry, which pours such large sums of money into research, is of course well aware that the incentive to inventors (and indeed to all research-workers) should be at an optimum. The policy to follow in this respect, however, differs from case to case and companies should be free to distribute this incentive as they deem appropriate between salary levels, promotion, special monetary reward, status symbols etc.—Any incentive plan, however, should foster team spirit and not damage it, as the existing German law does.

16. There is little danger that an inventor of great originality will fail, in the absence of special legal provisions, to find sufficient com-

pensation for his achievements since, generally speaking, firms vie with each other to attract just such people, even in some cases with little regard for frontiers and other natural barriers.

17. On the other hand, with a remuneration system rigidly prescribed by law, there is always the possibility that an invention of little inventive merit will bring in for the inventor an unduly large reward, if it concerns, for instance, a gadget which by shrewd advertising and/or the fashionable whim of the public turns out to be a big sales success. In such a case, paying substantial rewards to the inventor does not mean any great hardship to the firm, but it constitutes an injustice to fellow employees.

18. Lastly, with a salary for the remuneration of inventors along German lines, firms may be tempted to fix the basic salaries of research-workers, who are supposed to make inventions, at a lower level, if only to do justice to, for example, the scientists doing basic research. A system of "no cure—no pay" would certainly not be in the interest of research workers.