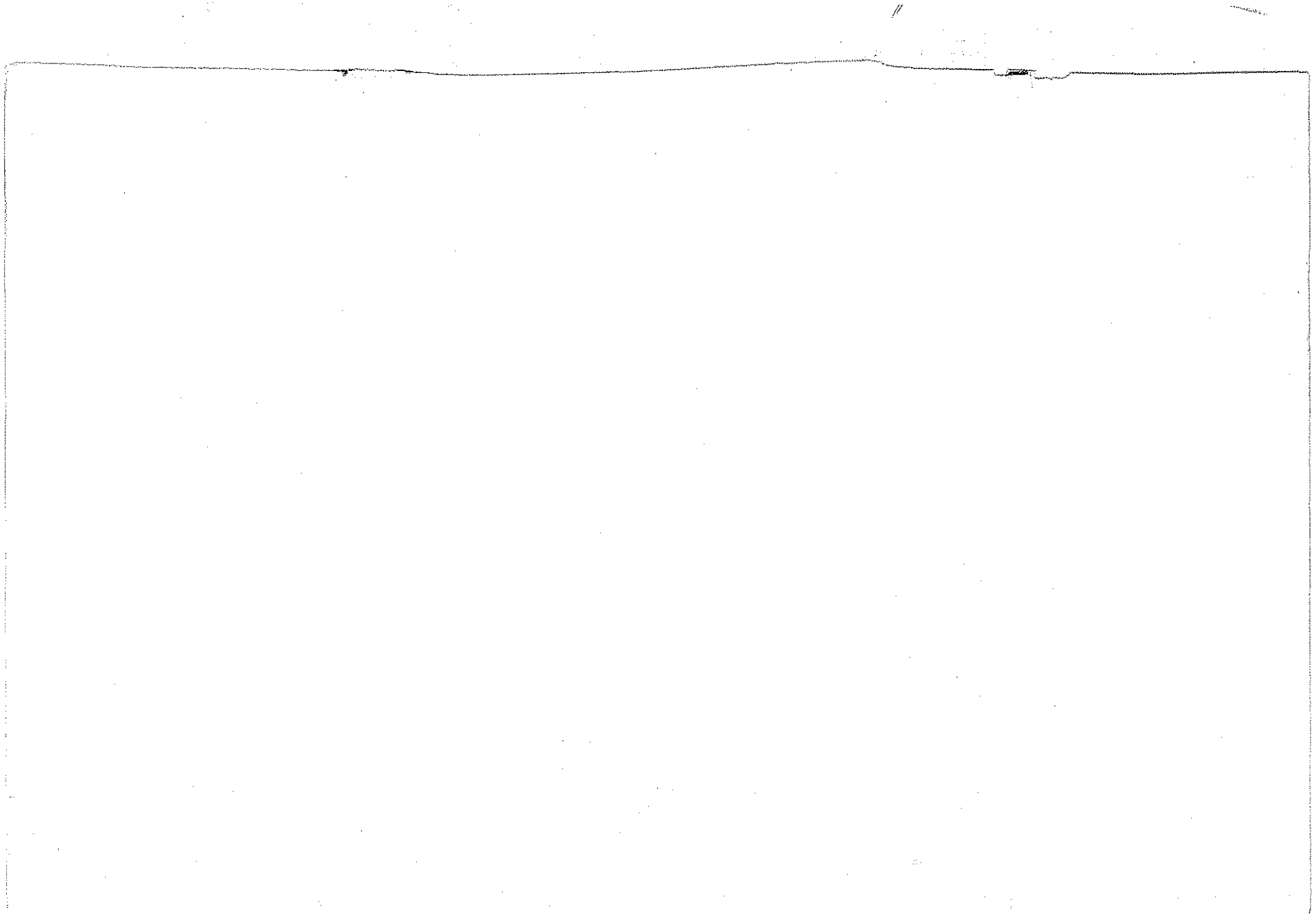
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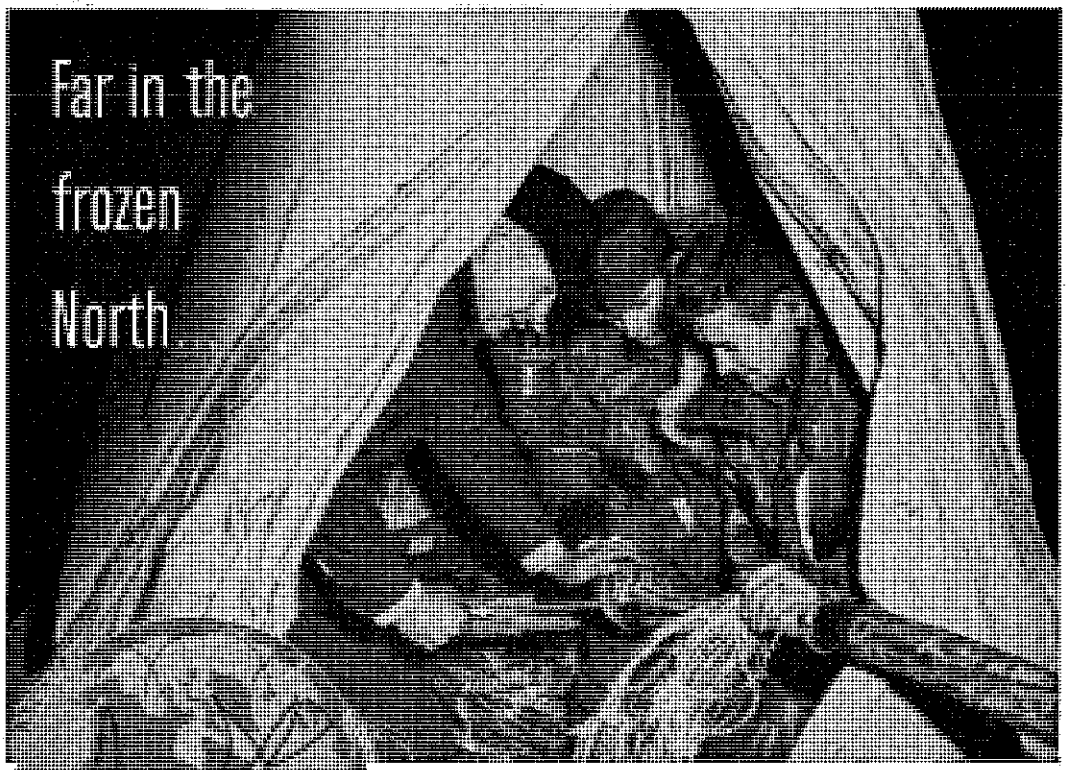
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Bell Telephone engineers are putting together the nervous system for BMEWS ...Ballistic Missile Early Warning System

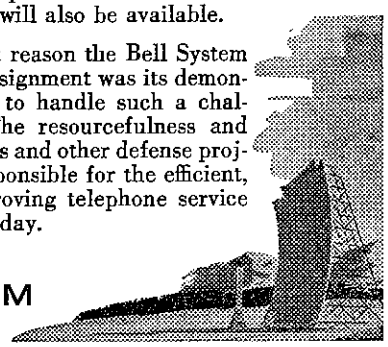
The eyes of the U. S. Air Force BMEWS will be massive, far-seeing radars located in Alaska, Greenland and Great Britain. The brain is at the Continental Air Defense Center in Colorado Springs. Between the eyes and the brain there will be a vast network to provide instantaneous, highly reliable communications in the event of enemy missile attack.

The Bell System's manufacturing and supply unit, Western Electric, heads a team of 30 private firms and government agencies from three countries which is constructing this communications system.

Work is going ahead at full speed, right on schedule. All of the arts of long distance communications are being used to conquer the stern, hard-bitten terrain of BMEWS—line-of-sight and over-the-horizon radio, cables on land and under water.

Several forms of transmission are being employed. Newly designed high-speed data channels will feed information to the BMEWS computers. Voice and teletypewriter links will also be available.

One important reason the Bell System was given this assignment was its demonstrated capacity to handle such a challenging task. The resourcefulness and skill shown in this and other defense projects are also responsible for the efficient, continually improving telephone service you enjoy every day.



BELL TELEPHONE SYSTEM

Part II provides 37 forms for "Special Actions" in the district courts. It covers forms for condemnation, criminal contempt, habeas corpus, and mental health proceedings.

Part III seems to quite adequately cover the forms necessary in "Bankruptcy Proceedings", including the Official Forms in Bankruptcy as prescribed by the Supreme Court. For the convenience of the user, the General Orders in Bankruptcy are included in the appendix.

Part IV, "Admiralty Jurisdiction", is new and quite brief, covering only four forms used in a seizure and condemnation proceeding for adulterated and misbranded foods.

Part V covers "Criminal Actions" and, like its civil counterpart, it has been considerably expanded and now contains an excellent collection arranged in 48 sections for ease of reference. New additions include such matters as forms for inspection of grand jury minutes by defendant.

Parts VI and VII cover appellate procedures arranged in separate parts for "Supreme Court of the United States" and "United States Courts of Appeals". These include a good selection of forms covering the usual appellate procedures plus specific forms for appeals from decisions of the Tax Court and Civil Aeronautics Board. Specific forms for use in appeals from the Interstate Commerce Commission are contained in the "Three Judge Court" section of Part I.

Parts VIII through XII cover, somewhat briefly, forms for practice before the Court of Claims, Court of Customs and Patent Appeals, Customs Court, Court of Military Appeals, and Tax Court. The part covering the Court of Claims has been considerably expanded over the first edition and the Court of Military Appeals is a new addition.

Part XIII, "Administrative Agencies", is, on the whole, a noteworthy compendium of agency practice. It more than adequately covers most and is particularly good in its expansion over the first edition of forms for practice before the Federal Trade Commission and Interstate Commerce Commission.

Part XIV, "Captions", sets forth sample captions used in the various federal courts and agencies covered by the set.

An appendix of great value to the user in conjunction with the footnotes contains, in addition to the previously mentioned General Orders in Bankruptcy, the Administrative Procedure Act, the Federal Rules of Civil and Criminal Procedure, and the Revised Rules of the Supreme Court. It also contains the rules for the Court of Claims, Court of Customs and Patent Appeals, Customs Court, Court of Military Appeals, and the Tax Court.

Each sample form, where applicable, includes examples, in most instances, of the possible important internal variations resultant from the varied situations that could occasion its use. In many instances the author provides a choice of forms. The footnotes are, in this respect, generally quite helpful. In fact the user will normally find the footnotes helpful both in arriving at the proper conformation of the sample form to his particular needs and also for guidance in its use through comment and reference to the appropriate rules, etc. in the appendix.

In conclusion, every attorney who may make use of this encyclopedia collection will more than likely on occasion find what are to him significant

ly become more strict on the specificity of the pleadings, particularly with respect to the Commissioner's pleadings in fraud cases. The treatment of transferee liability indicates that the respondent must show that the transferor was insolvent or rendered insolvent by the transfer but neglects to say that if the Commissioner can show that the transfer was fraudulent as to creditors he is relieved of the necessity of showing insolvency.[7]

Mistakes or oversights occasionally appear in the work; however, these are insignificant and scarcely detract from the general merit of the book. For example, in the discourse on the Tax Court, some discussion is given to the possibility of a hearing before a Tax Court Commissioner. In recent years the Tax Court has very rarely utilized trial commissioners. Similarly in listing the sections of the Department of Justice's Tax Division, the authors seemed unaware of the Claims Section and that it supervises such matters as liens, bankruptcies, receiverships, and the like. In dealing with the burden of proof problem, the Freemans indicated that the Commissioner has the burden of proof in penalty (or more correctly—"additions-to-tax") cases. To be accurate, it is the taxpayer who must overcome the Commissioner's determination in the ordinary penalty case such as negligence, late filing, understatement, and failure to file.

Finally, there are a few places where the questions raised or suggestions posed received "thin" treatment or are just not answered or considered. For example, a statement is made that there are several presumptions available to the taxpayer but the reader is not enlightened as to what these are. The reader will find in the discussion of criminal tax cases, the writers' suggestion that astute counsel can often head off prosecution in the Regional Intelligence Division. Suggestions in this respect are not made. A small section concerns the method of computing interest but lacks discussion of computing interest in transferee cases.

Of course, it is a small task for a reviewer to criticize. Any book attempting to cover a difficult and extensive subject is predisposed to minor errors and shortcomings. Overlooking these, this text is an extremely useful tool either as a ready reference at the practitioner's fingertips or, for those just beginning as students of taxation, as an excellent way to begin their education.

Reviewed by Lawrence J. Lee *

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* Law Clerk to Tax Court Judge; Member of New York Bar and District of Columbia Bar

[7] *Frances M. Cole*, T.C. Memo, 1960-278 (Filed December 30, 1960).

THE TAX PRACTICE DESKBOOK

By Harrop A. and Norman D. Freeman, Boston, Massachusetts: Little, Brown and Company. 1960. 581 pp. $17.50.

As the preface indicates, the authors have "attempted to catch the spirit of the tax law and tax practice" in their book. It is an ambitious undertaking at which few have achieved success. The Freemans have made a noteworthy attempt. Professor Harrop A. Freeman has distilled the experience and learning of thirty years of rewarding tax practice and teaching into less than 600 pages. The effort should not go unnoticed.

But obeisance to the author is not a review's purpose. Rather it is to scrutinize and dissect the end product. Generally, the text is arranged to guide the reader step-by-step through the various aspects of practice by starting from the transaction giving rise to tax implications and ending with the final decision or judgment. This, however, leaves the 500 pages of material in between unnarrated.

The scope of the textual material is best demonstrated by listing the titles of the twelve chapters. These are as follows: General Tax Practice, Preventive Tax Practice, Facts! Facts! Facts!, The Internal Revenue Service, Deficiencies and Overassessments, The Tax Court, The Justice Department and Tax Cases, Refunds, Appeals in Tax Cases, Common Procedural Problems, Penalty Cases, and How to Brief a Tax Case.

One illustration will suffice to exemplify the contents of the chapters. Chapter II (Preventive Tax Practice) contains a subheading styled "Getting Internal Revenue Service Opinions and Rulings; Their Value." This subchapter gives the reader a general discussion of rulings and opinions, defines them, indicates when they should be sought and when they will be issued, the procedure for obtaining them, and their value once obtained.

Coverage is given, albeit thin in some chapters, to all important aspects of tax practice. Particularly helpful is the treatment given to the structure and inner workings of the Internal Revenue Service. This is a subject little understood by most practitioners and will provide insights helpful in negotiations with the Service personnel.

The book's substance is set forth in a simple, compact and apprehensible manner. The text is richly footnoted. The readers should be cautioned not to overlook these footnotes because they contain much detailed material and the authors vary or amplify textual rules in their footnotes.[1] Each chapter closes with a selected bibliography of post-1948 law review articles.

This book is obviously not intended as a definitive treatment of tax practice and procedure. One volume is hardly up to the task. It is, as the title indicates, a handy deskbook, and being such fills the present void between the

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[1] For example, the authors indicate that the rule is that the statute of limitations applying to the transferee is the period applicable to the transferor plus one year (see pages 342, 353, 392). It is not until 40 pages later (page 389, footnote 45) that they state that if an assessment has been made against the transferor, the Commissioner has six years thereafter to move against a transferee and no more. See *Bartmer Automatic Self Service Laundry, Inc.*, 35 T.C. No. 41 (Filed Nov. 23, 1960).

for each country, on any single topic or question. Part III of the work consists of an "Analysis of Taxes other than Income Tax."

This simple structure and cohesive organization is a feature whose value should not be underestimated. The life of the law in the Anglo-Saxon world has depended, perhaps more than on anything else, on the influence of text books. The major ones, such as those of Bracton and Blackstone, had their enormous impact on the world of letters and the minds of people, largely because of their superb organization and readability and the fact that they could be easily understood. They informed the fresh mind as nothing else in their times could inform. So in this respect, certainly, the World Tax Series, in its narrower field, appears to be following in a great tradition.

But, you may ask, who cares about taxation in Sweden? Well, Sweden was apparently chosen as the subject of an early volume of the series because it is a small, yet wealthy country, which a very sophisticated tax system, and of special interest to the developing countries. It appears to have three notable features of taxation. First, firms are permitted to establish substantial tax-free reserves, with full discretion in the corporation to take a larger or smaller deduction in a particular year. The only gimmick in this is that this money can only be spent with the permisison of the government. Nevertheless, this provision does reflect a somewhat novel objective, by our standards, which is to enable private enterprise to influence the business cycle by promoting the building up of a substantial tax-free reserve in good years which may be spent in bad years.

Second, Sweden's liberal attitude toward depreciation has attracted perhaps an even larger share of international attention. From 1938 to 1951 Swedish corporations enjoyed the right of "free depreciation" of machinery and equipment. That is, for tax purposes they were permitted to write off the cost of any piece of machinery or equipment completely at their own discretion and without regard to its useful life. After World War II this was criticized as aggravating an already inflationary situation, and in 1955 provisional limitations on free depreciation were imposed. Without going into the details of the somewhat complex formula involved, it may suffice to say that over half the cost of the stock of machinery may still be written off in two years, and the entire cost of any machine, regardless of its useful life, may be written off in five years.

The third notable feature consists of the range of discretion given Swedish taxpayers in the rules governing inventory evaluation. For many years, the right of free depreciation was paralleled by a "free right of evaluation" of inventories. This has now been somewhat restricted by new rules enacted in 1955, but they are still extremely liberal. In the perhaps envious words of the Federation of British Industries, *Taxation in Western Europe*[3] these rules provide "extensive facilities for discounting evaluations through the creation of tax-free reserves."

Perhaps all this goes to show that even though we are now pretty well accustomed to our own basic philosophies of taxation, they may not remain static. Taxation is a truly dynamic subject. There are many new ideas floating around; and each country undoubtedly has something which it can learn from many of the others. And finally, there can scarcely be any doubt, in the writer's mind

[3] London, 3d ed. (1959), p. 128.

BOOK REVIEWS

TAXATION IN SWEDEN

by

Martin Norr, in collaboration with Frank J. Duffy and Harry Sterner.

Boston, Massachusetts: Little, Brown and Co., 723 pp., $17.50

This book is the fifth volume in the World Tax Series published as part of the Harvard Law School International Program in Taxation in consultation with the United Nations Secretariat.

One hundred years ago there was probably little intellectual interest on the part of any one nation in the system of taxation used by any other. Indeed, in describing the development of the income tax, Blum and Kalven, in their book *The Uneasy Case for Progressive Taxation* [1] wrote: "Taxation seems to have been a rather provincial matter with each country working out its own system."

Today, however, with the industrial revolution behind us, with high costs of government which appear still to be rising, with the creation of many new governments and the blooming, in certain areas at least, of the welfare state, a definite international current and flow of ideas in the tax field appears to have arisen. First, new developments in the field of taxation are now considered newsworthy. We find that the fact that Iceland is considering abolition of its income tax because its fishing captains now stop fishing about September of each year, has been broadcast worldwide. And in France the fact that dividends of certain corporations have become deductible from taxable income, has also excited international attention.

Second and most important, the advent of the United Nations has now provided a direct stimulation of a flow of information about the tax systems of the world. Indeed, the remote origins of the World Tax Series may be found in an early recognition by the League of Nations of a need for organized fiscal information. The League made efforts to collect such material in the 1920s and 1930s. Then, with the establishment of the United Nations in 1945, and of its Fiscal Commission in 1946, a program for building up a body of fiscal information began to move into high gear. After some preliminary steps, and in May, 1951, a draft resolution prepared by the Fiscal Commission was presented to the Economic and Social Council calling for publication of a world tax service, and, interestingly enough, affirmatively seeking the cooperation of universities in such a venture. In August, 1951 that resolution was adopted; and pursuant thereto, the United Nations Secretariat and Harvard Law School worked out a plan and basic outline for what is now the World Tax Series. Moreover, this relationship has been a continuing one, so that what is contemplated is a progressive study of taxation at a truly high level.

The practical result was that an International Program in Taxation was established by Harvard Law School in 1952, and the World Tax Series undertaken as one of its major research projects. In addition, it was not undertaken

[1] University of Chicago Press (1953), p. 13.

ponding patent application in any foreign country. Since many of the inventions involved are privately owned, there had to be developed a workable means for the owners of such inventions to obtain foreign patent protection in appropriate cases.

A solution to this problem was envisaged in the Patent Interchange Agreements, which provide for the establishment of arrangements by which, when a patent application is held in secrecy in one country, similar treatment will be accorded a corresponding application filed in the second country. In implementation of this provision, agreements covering procedures for the reciprocal filing of classified patent applications of defense interest have been concluded between the Government of the United States and the Governments of Belgium (May 18, 1960), Denmark (June 20, 1960), France (July 10, 1959), the Federal Republic of Germany (May 26, 1959), Greece (April 26, 1960), Italy (October 27, 1959), The Netherlands (October 8, 1959), Norway (January 17, 1959), and Turkey (September 16, 1959).* In addition to the foregoing agreements, the United States has for some time, had in effect informal agreements of this nature with Canada, the United Kingdom and Australia.

In essence, these agreements enable the owner of a United States patent application placed in secrecy to obtain a modification of the Secrecy Order permitting the filing of a corresponding patent application in the particular country, party to the agreement, provided such modification is consistent with U.S. security interests. This provides an inventor with an opportunity to protect his invention in that country against subsequent inventors who might file on the same invention. The procedures prescribe the requirements for obtaining permission to file in that country and set forth the channels to be used for transmitting the application and the security safeguards to be observed. These agreements also have similar provisions covering classified applications originating in the other country, which are to be filed in the United States.

D. *Munitions Control Regulations.*

Section 414 (a) of the Mutual Security Act authorizes the President "to control, in furtherance of world peace and security and foreign policy of the United States, the export and import of arms, ammunition, and implements of war, including technical data relating thereto. . . ." [52] The President has delegated the functions conferred upon him by Section 414 to the Secretary of State who has issued detailed regulations on this subject.[53] These regulations contain the "United States Munitions List" which enumerates the articles designated as "arms, ammunition, and implements of war." Exportation of unclassified technical data relating to articles on this list is subject to the above regulations which, in most cases, require that an export license be obtained from the Secretary of State.[54] Special requirements are also laid down for proposed technical assistance or manufacturing license agreements which may involve the transfer or interchange of technical data.[55] Classified military information, including classified

* See Note 58.

[52] 22 USC 1934.

[53] 22 CFR 121; 25 FR 1821.

[54] 22 CFR 125; 25 FR 1827.

[55] *Ibid.*

B. *Invention Secrecy in the United States.*

Because the period of protection afforded inventors by a patent gives them a "head start" on their competitors, it furnishes a powerful stimulus to scientific and industrial progress. In order to provide this protection to inventors, in the United States, as in most other countries, the relationship between inventors, their attorneys and the Patent Office has always been such as to preserve the invention from public knowledge until such time as the patent is granted. Consequently, applications are processed by the Patent Office in a thoroughly confidential manner, under procedures which basically incorporate practices kindred to those found in the security field. However, as soon as a patent is granted, the invention becomes a matter of public knowledge. In fact, any one, be he friend or foe, may buy a copy of the patent for twenty five cents.[42] Therefore, it is obvious that patents should not be granted on inventions whose disclosure would be detrimental to national security. In order to effectively deal with this problem, United States laws provide for the withholding of a patent in such cases and at the same time erect suitable safeguards for the rights of the inventor.

Under the terms of the Invention Secrecy Act, the Commissioner of Patents is required to submit to the Secretary of Defense any application describing an invention, the public disclosure of which by the granting of a patent might be detrimental to the national security.[43] The organization primarily responsible for assisting the Secretary of Defense and the Commissioner of Patents in carrying out this responsibility is the Armed Services Patent Advisory Board.[44] The Board consists of twelve members, four each from the Army, Navy and Air Force. The primary functions of the Board are to review applications which are referred to it by the Commisisoner of Patents.

The Board provides the Commissioner with broad guidelines as to the types of inventions in which the armed services have a security interest. Any application filed in the Patent Office which falls within the designated categories is held for inspection by technical experts of the military services having knowledge of classified developments in this field.[45] If, in the judgment of one of these experts, a given invention is of such character as to require security precautions, the Secretary of the Board notifies the Commissioner of Patents who then issues a secrecy order.[46] This is a written notice informing the inventor that further disclosure of his invention is prohibited and the particular U.S. patent application concerned is said to have been "placed in secrecy." A secrecy order in effect, or issued, during a national emergency declared by the President shall remain in effect for the duration of the national emergency and six months thereafter.[47] In the ab-

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[42] 37 CFR 1.21 (d).

[43] 35 USC 181.

[44] Department of Defense Directive 5535.2, July 15, 1953.

[45] However, as an additional safeguard for the owner of the opplication 37 CFR 5.1 provides:

> Such inspection must be at the Patent Office and by responsible representatives of the agency who are required to sign a dated acknowledgement of such access accepting the condition that information obtained from the inspection will be used for no other purpose than in the administration of sections 181-188 of Title 35, U.S. Code.

[46] 35 USC 181.

[47] *Ibid.*

a general consideration of international patent relations as well as some deliberation as to the impact of military security on those relations.

The national patent laws of the various countries of the world, to the extent that they have a common theme, grant patentees the right to exclude others from making, using or selling the patented invention in the grantor government's jurisdiction. Contrary to a popular misconception, this right of exclusion extends only throughout the territory of the government granting the patent, and has no effect on a foreign country. Consequently, an inventor must file a separate patent application in each country in the world where he wants patent protection. However, the protection afforded by a patent is circumscribed in a variety of ways from one jurisdiction to the next.[34] To begin with, the duration of the patent grant varies from country to country; in the United States a patent's life is 17 years, while in other countries it may vary from as little as 5 years for petty patents to as long as 20 years for ordinary patents. In addition, different countries have different restrictions as to the subject matter that may be covered by the patent grant.[35] Finally, national concepts of patent "abuse" and penalties for misuse such as compulsory licensing, revocation, and dedication, are also varied.[36] These different national patent laws have been ingeniously linked together by the International Convention for the Protection of Industrial Property.[37] This Treaty, now in its 74th year, includes among its fifty member nations every major industrialized nation of the free world and a few in the Soviet orbit, although Soviet Russia itself is not a party. While the scope of the Convention extends to such other industrial property as trade marks and trade names, we are interested primarily in the rights to which patentees in any signatory country may be entitled under the national patent laws of other signatories. Therefore, for purposes of this discussion, we need consider only two of its main provisions.

First, the signatories of the Treaty have agreed to grant patent treatment to nationals or residents of other signatory countries equal to the treatment they grant their own nationals.[38] This eliminated the possibility of discrimination against foreigners, and is possibly the greatest achievement of the Treaty from the point of view of inventors and investors.

Probably the most important provision of the Convention is one which gives a prospective patentee who has filed an application in any signatory country, a period of one year in which to apply for patent protection in any other convention country.[39] If the applicant files within 12 months of the time he filed his

[34] For a summary of the various foreign patent laws see Langner, Parry, Card and Langner, *Foreign Patents,* Fourth Edition 1951.

[35] In the United States a patent may be granted on "any new and useful process, machine, manufacture, or composition of matter" (35 USC 101), certain kinds of plants (35 USC 161), and "any new, original and ornamental design for an article of manufacture" (35 USC 171).

[36] See Edwards, *Maintaining Competition,* pp. 236-248 (1949); Penrose, *Economics of the International Patent System,* pp. 137-162-204 (1951); Federico, *Complusory Licensing in Other Countries,* 13 Law & Contemp. Prob. 295-309 (1948); also U.N. Economic and Social Council Off. Record, 16th Sess. Supp. No. 11B (Doc. No. E/2379/Add. 2, E/AC.37/2 Add. 2, 1953); and U.N. Economic and Social Council, Off. Record, 19th Sess., Supp. No. 3 (Doc. No. E/2671, 1954); Chap. V, Patent-Antitrust Problems, in Report of the Attorney General's National Committee to Study the Antitrust Laws (1955).

[37] 53 Stat. 1748; TS 941. This convention was last revised at a diplomatic conference in Lisbon during October 1958.

[38] Convention, Article 2.

[39] *Id.* Article 4.

2. *From the Private Owner Directly to the Foreign Government.* In many instances it is recognized that the private owner may deal with the foreign government rather than with a private firm in the other country. The agreements provide that when a national of one contracting country makes technical information available directly to the government of the other contracting country, the recipient government shall, at the owner's request, take such steps as may be possible under its law to provide "prompt, just, and effective compensation" for the use or disclosure of such technical information.[25] In this connection, one of the functions of the Technical Property Committees established under the agreements is to make recommendations to the contracting governments as to the means for remedying disparities between the laws of the two countries governing compensation for technical information made available for defense purposes.[26]

The governments agree further to supply as far as practicable such assistance and information as is necessary to enable owners to protect and preserve their rights.[27]

3. *From the Private Owner Through His Own Government to the Foreign Government.* In certain instances privately-owned technical information may be transmitted by one government to another. In some cases such transmission is for purposes of information only. With respect to such transmission, the agreements provide that the recipient government shall treat the information as disclosed in confidence and use its best endeavors to insure that the owner's rights are not prejudiced.[28]

If in any case such transmission should be made without the authorization of the owner, such owner may have a claim for resulting damages against the transmitting government. In so far as the United States is concerned, the principal statutory remedy for such damage is to be found in Section 506 (b) and (c) of the Mutual Security Act of 1954, as amended.[29]

In any case, however, in which information is transmitted with the consent of the owner and the damage to the owner's interests arose purely from acts of the recipient government, it is contemplated that the owner would pursue appropriate remedies against the recipient government.

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[25] Article I, Agreement with Italy; Article IV, other Agreements.

[26] Exchange of letters appended to Agreement with U.K. Such matters could also be appropriately be considered under the general language of Article II of the Agreement with Italy; Article VI, other Agreements.

[27] Articles IV and VII, Agreement with U.K.; Article VII, other Agreements.

[28] Article IV, Agreement with Italy; Article II, other Agreements.

[29] 22 USC 1758. This provision reads as follows:

"(b) Whenever, in connection with the furnishing of any assistance in furtherance of the purposes of this Act—

(1) use within the United States, without authorization by the owner, shall be made of an invention; or

(2) damage to the owner shall result from the disclosure of information by reason of acts of the United States or its officers or employees, the exclusive remedy of the owner of such invention or information shall be by suit against the United States in the Court of Claims or in the District Court of the United States for the district in which such owner is a resident for reasonable and entire compensation for unauthorized use or disclosure. In any such suit, the United States may avail itself of any and all defenses, general or special that might be pleaded by any defendant in a like action."

"(c) Before such suit against the United States has been instituted the appropriate United States Government agency, which has furnished any assistance in furtherance of the purposes of this Act, is authorized and empowered to enter into an agreement with the claimant, in full settlement and compromise of any claim against the United States hereunder.

United Kingdom,[10] Belgium,[11] Norway,[12] The Netherlands,[13] Greece,[14] the Federal Republic of Germany,[15] Turkey,[16] Japan,[17] Australia,[18] Denmark,[19] and Spain.[20] Similar agreements may also be negotiated with other countries as circumstances warrant.

B. *What are They all About.*

As already indicated, the primary objective of these agreements is to facilitate and encourage the flow of technology between free nations for defense purposes. Such technology is owned in some instances by the governments, but in many cases may be privately-owned.

Where government-owned inventions are concerned, it is intended that the exchange will, in so far as possible, be on a royalty-free basis. To this end, the agreements generally provide that each contracting government will make government-owned inventions available to the other government for defense purposes, without cost except to the extent that there may be liability in respect of private interests in the inventions.[21]

In the case of privately-owned patents and technical information the agreements provide that the rights of the private owners should be fully recognized and protected in accordance with applicable law.[22] The various provisions of the agreements relating to the interchange of privately-owned patents and technical information are described in detail in the next section.

The agreements further provide for the establishment of arrangements by which owners of patentable inventions placed under secrecy by one government may obtain comparable protection in the other country.[23] These implementing arrangements, which set forth procedures for the reciprocal filing of patent applications on inventions held in secrecy, will be described in Section IV, Impact of Military Security.

In order to provide an effective mechanism to deal with international problems in this field, each agreement provides for the creation of a bilateral

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[10] Signed at Copenhagen and entered into force on February 19, 1960; TIAS 4423.

[11] Signed at Brussels and entered into force on October 12, 1954, 5 UST 2318; TIAS 3093; 202 UNTS 289.

[12] Signed at Oslo and entered into force on April 6, 1955, 6 UST 799; TIAS 3226.

[13] Signed at The Hague and entered into force provisionally April 29, 1955, definitively July 13, 1955, 6 UST 2187; TIAS 3287; 219 UNTS 105.

[14] Signed at Athens and entered into force on June 16, 1955, 6 UST 2173; TIAS 3286; 262 UNTS 137.

[15] Signed at Bonn and entered into force on January 4, 1956, 7 UST 45; TIAS 3478; 268 UNTS 143.

[16] Signed at Ankara, May 18, 1956; entered into force April 2, 1957, 8 UST 597; TIAS 3809; 283 UNTS 167.

[17] Signed at Tokyo March 22, 1956; entered into force June 6, 1956, 7 UST 1021; TIAS 3585; 275 UNTS 195.

[18] Signed at Washington and entered into force January 24, 1958; 9 UST 5; TIAS 3974; 307 UNTS 105.

[19] Signed at Copenhagen and entered into force on February 19, 1960; TIAS 4423.

[20] Signed at Madrid and entered into force on July 21, 1960; TIAS 4588.

[21] Article V, all Agreements.

[22] Article I, Agreement with Italy; preamble, other Agreements.

[23] Article VI, Agreement with Italy; Article III, other Agreements.

INTERNATIONAL EXCHANGE OF PATENT RIGHTS AND TECHNICAL INFORMATION FOR DEFENSE PURPOSES

*Lt. Col. George F. Westerman, JAGC**

I. Introduction

Effective production of equipment and material for the Armed Forces of the United States and other free nations is a vital factor in the success of any program for the defense of the free world. In order for such production to be fully effective from the military point of view, it is important for our allies to be able to produce as much military equipment for themselves as possible. This helps them develop a strong mobilization base and eliminates their dependence on outside sources for such equipment. However, in order to accomplish this purpose, there must first be made available to the nation or nations concerned, the necessary technical knowledge and experience for the manufacture of modern weapons. Literally, tons of blueprints, drawings, and other manufacturing data have been furnished by the United States under recently completed arrangements for NATO coordinated production of the Hawk and Sidewinder missiles.[1]

We are also placing great emphasis on the principle of "share your knowledge" in fields other than military production. Through our long established program of technical cooperation and by our contributions to the United Nations activities in the technical assistance field, we are striving to satisfy the tremendous needs of many underdeveloped countries for growth in knowledge and technical capacity.[2] Finally, under the Mutual Weapons Development Program, we have greatly increased the exchange, with our NATO allies, of scientific information related to military research and development.[3]

From the foregoing, it is obvious that the interchange of patent rights and technical information between the United States and friendly foreign nations is an important factor in the Mutual Security Program. It is the purpose of this study to briefly summarize and explain the framework of United States legislation and international agreements designed to create a favorable climate in which patent licenses and know-how will be more freely made available to further our mutual defense effort.

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[1] Ostrander, Don R., Maj. Gen., USAF, "NATO Joint Missile Production," NATO Letter, vol. 7, No. 12. Dec. 1959, pp. 8-10.

[2] The Mutual Security Program Fiscal Year 1961, A Summary Presentation, March 1960, p. xii.

[3] Mutual Weapons Development Program Information Brochure, 1 November 1959, pp. 1-3.

The public interest also includes the closely related objectives of economy and efficiency in the procurement of R&D. This is only to say that federal funds for contract R&D should be well spent. Whether or not they are is a matter which, however important, is far beyond the scope of our study.

The issue of economy is raised in the contention that the license policy results in large windfall gains to industry. According to this thesis, the federal government, in allowing valuable patent rights to remain with contractors, is paying for more than it receives, and is thus wasting the people's funds. On the other side of this part of the controversy, it could be stated that, to the extent that contractors accept lower contract terms because of the prospective values of the patent rights that they retain, the license policy results in a reduction of R&D costs to the government.

Efficiency means that R&D is carried out by the best qualified of possible contractors—those with experience and know-how, and with adequate facilities and competent personnel. The real question here is whether the retention of patent rights tips the balance in contract negotiation.

The relevant public interest embraces also the maintenance of competition in American industry. This goal of national economic policy includes the prevention of undue concentration of economic power. A closely related, though actually a distinctly separate, goal is the promotion of small business. The antitrust laws are the means to the end of preventing concentration, and various services and loans are the means of promoting small business. The attainment of these two ends is hampered, where it is not frustrated, by the operation of other federal and state policies. Efforts to attain the goals of enhanced national security and of improved technology may run counter to efforts to maintain competition.

The distinction between concentration and the preferred position is a distinction between the economic and the political. Though the economic causes of concentration in industry are complex, it suffices to say that the effects of the causes that flow from the actions of government are slight and sporadic. Almost all of the existing concentration in American industry has come about independently of government action and despite government policy, because anti-concentration policy, primarily the antitrust laws, proscribes only certain methods of achieving concentration. The government actions affecting concentration in the postwar period have been procurement, tax concessions for the construction of defense facilities, and R&D contracts containing the license policy. Whether and to what extent these actions have noticeably increased or decreased the degree of concentration in industry are matters of opinion and of controversy among specialists. The methods of investigation employed in our study do not permit quantitative measurement of the impacts of patent policies on concentration.

Although the actions of the federal government may or may not significantly affect concentration, preferred positions by definition arise directly because of the actions of government. Officials of the Atomic Energy Commission have explained and justified the patent policies of that agency on the ground that AEC has deliberately avoided the granting of preferred positions or undue privileges to a particular company or companies. Having continually to explain and defend its actions and policies before the Joint Committee on Atomic

such materials could be obtained, we sent a questionnaire to a selected group of AEC contractors. The group included the contractors originating 90 per cent of the inventions produced under AEC-sponsored research, plus those, not already included, holding "B" and "C" licenses from the Commission.

Our investigations of the patent policies of the Department of Defense and of the Atomic Energy Commission were conducted so as to develop as much factual material as possible. But facts, as well as judgments based on them, can be assembled only within a framework of reference, which is used also to appraise the facts and related materials. The framework is our conception of the public interest.

The patent policies of federal agencies are not ends in themselves, but are only one of the instruments of the public interest. A task of discovery, not of invention, the definition of the public interest must be relevant—to the one complex of ends and means of which patent policies are apart.

The objectives of the relevant public interest include the improvement of technology, the achievement of economy and efficiency in the procurement of R&D, and the prevention of additional concentration in industry. Besides these general objectives are those specific to individual federal agencies. R&D contracts play different roles in the missions of federal agencies. Some agencies are concerned with the procurement of improved equipment, whereas others have the tasks of advancing particular fields of technology. And all agencies with research contracts want to get the best contractors available.

These objectives of the federal government, together with those specific to federal agencies, are in turn means to still higher ends of national policy. The improvement of technology promotes defense, scientific progress, the advancement of knowledge generally, and above all, economic growth. The generally accepted meaning of economic growth is the rise in real output per capita. This rise is due to the gains in the productivities of labor and of capital equipment, and to the increase in the amounts of capital equipment relative to the labor force. Continued economic growth means higher levels of living, a stronger base for the national defense, and in the long run, a wider range of freedom through the expansion of areas of choice.

Besides the patent policies in R&D contracts, many other instruments of policy are used to advance economic growth, to strengthen the national defense, and to maintain a competitive economy. Most of the other instruments of policy are in fact much more powerful. For example, a doubling of the expenditure of funds for R&D within, say, the next five years would probably exert a stronger effect on technology, growth, etc., than a major change in present patent policies. The effects of the patent policies tend to be obscured by the operation of the many other and more powerful policies serving the same ends.

Much of the controversy on federal patent policies has had to do with the promotion of technology. Its advocates insist that the license policy, by encouraging private incentives and efforts, advances technology; some of these advocates insist that under the opposite policy, patented inventions owned by the government are almost certain not to be developed further. In contrast, advocates of the title policy argue that government ownership of patents makes it possible for new techniques to be widely and quickly adopted.

RESEARCH IN PATENT POLICIES IN FEDERAL RESEARCH AND DEVELOPMENT CONTRACTS

Donald Stevenson Watson *

The Winter 1960 issue (Volume 4, Number 4) of *The Patent, Trademark, and Copyright Journal of Research and Education* is devoted entirely to the publication of a study of patent policies in government-financed research and development contracts. The study was undertaken in 1960 by The Patent, Trademark, and Copyright Foundation of The George Washington University, under a contract with the General Services Administration. Acting upon a request from the President of the United States, the Administrator of the General Services Administration established in 1957 an interagency committee known as Study Group No. 14 on Patent Policy. The Commissioner of Patents has been Chairman of the Study Group. The mission of the Study Group was to evaluate, in the light of the public interest, existing practices governing the division of patent rights between contractors and the government, in research and development contracts financed by the government.

Though it was active from 1957 to 1959, the Study Group lacked staff and funds of its own, and hence found it difficult to develop the factual materials necessary to carry out its mission. Thus it was decided to seek outside help.

My colleagues—Professors Harold F. Bright and Arthur E. Burns—and I began our investigation early in 1960. Our study was carried on with limited resources and had to be completed within a comparatively short space of time.

It is the purpose of this article to show the scope of our study, its method, and the criteria of the public interest that we think are relevant in appraising patent policies.

Nearly every federal agency that farms out part of its research and development (R&D) to contractors has acquired both licenses and titles to the patented inventions originated by contractors. But the heart of the controversies over patent policies is whether federal agencies should follow the general policy of acquiring licenses or the general policy of acquiring titles.

The central problem of our study is how the two policies have actually operated. We do not examine the practice of government's taking title to the patented inventions of its employees, nor do we look into the rights of federal agencies to acquire proprietary data from their R&D contractors. Neither do we offer still another appraisal of the patent system. This last point is important because much of the controversy over federal patent policies in R&D contracts entangles two separate issues. Advocacy of a uniform license policy is usually coupled with admiration for the patent system, whereas advocacy of a uniform title policy often accompanies hostility to the patent system. But the patent system is essentially private; it is a means of rewarding and stimulating wholly private inventive activity. In contrast, both the license and title policies are instruments of promoting objectives of joint public and private endeavors.

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American economy. The major nations of Western Europe have now taken effective action to bolster the patent incentive for inventors, some by statutes requiring compensation beyond salary for inventions, and others by high court decisions which invalidate provisions of employees' agreements if they fail to provide such compensation. The new Dutch and Italian award statutes should be compared with the German Federation law. The Swiss, French, Norwegian, Belgian and Danish court rulings should also be examined to see the extent to which the same principle of special payments for inventions is being revived to build up national industrial potentials.[98]

VI. CONCLUSIONS

1. So long as free economies based on personal initiative are threatened with extinction by totalitarian Communism their survival may well depend upon effective encouragement of individual initiative. *Incentive is the most central problem of a national policy on inventions. Questions of Government, as against private, ownership of the results of sponsored research and development work are insignificant when compared to the question of survival of a free economy.*

It has been noted hereinbefore that Eastern European countries have created very strong inducements for making innovations, discoveries and inventions not matched in this or any other Western nation except Western Germany. They have taken "very important steps towards creating the best possible conditions for the development of creative activity." [99] Such strong measures for encouraging technical advances should be carefully reviewed by lawyers, scientists and legislators to see what of their experience would promote progress here.

A universal mandatory system of participating awards such as has been adopted for employees of all classes, public and private, in Western Germany [100] should be given the most serious consideration with a view to enactment of effective legislation in this country. Could not the vigorously expanding German economy be achieved here with similar inducements? Indeed some progressive companies in the United States have already adopted bonus systems generally like those prescribed by German law.[101]

2. Any such national system of awards for inventions and technical improvements by persons in the Government service requires some type of central Administrator qualified to deal in the intricacies of invention law, rather than separate lower level organizations within the several departments and agencies of the Government. He should have authority to insure that all meritorious contributions are screened for novelty and utility, and tried out, if necessary, to determine their value. The amount of award should be based on such criteria.

3. Whatever system is employed to encourage inventions—patents, bonuses, or both—should be extended beyond the presently limited areas of patentable subject matter to include scientific discoveries and innovations or technical im-

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[98] For a summary of Western European provisions see *Validity of Contracts Assigning Employee's Inventions to Employer in U.S. and Europe* by William J. Rezac, 42 J. Pat. Off. Socy. 177, (1960), at 179-81 for Germany, at 183-84 for Holland, and at 187 for Italy.

[99] *Supra,* note 95.

[100] *Supra,* notes 4, 93.

[101] E.g., E. I. duPont de Nemours; *Patent Practices and Management,* by Robert Calvert, pp 348-55, 1950.

not yet a policy.[86] One may well ask how framers of policy can properly decide *whether* it is in the public interest to demand full ownership rights of any kind *until* it is known what use will be made of those rights. A policy for utilizing Government-owned inventions seems basic in carrying out the existing Government employee policy.[87] Any similar policy regarding Government-owned contractor inventions is of course subject to the same considerations. When the Government asserts only a domestic or world-wide royalty-free license this doctrinal conflict is not present.

Many commentators have also urged legislation to replace Executive Order 10096,[88] some because of disagreement with its middle-ground policy as now practiced, some because it is ambiguous and misunderstood, and others because of grave doubts as to the legal sufficiency of any executive regulation for adjudicating property rights. Each prior proposal for legislation has failed of passage [89] and an inter-agency divergence of views as to desirable criteria still prevails. The Bureau of the Budget has the matter under advisement but has not yet resolved the differences of view into an Administration recommendation.[90]

Concerning what may be done to remedy an apparent inadequacy of the United States statutes there is available some legislation much more significant for the purpose than the provisions of the Government Employees' Incentive

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[86] The Report of the Attorney General, *supra* note 18, Vol. 1, pp. 6-7, recommends, *inter alia*, "As a basic policy all Government-owned inventions should be made fully, freely and unconditionally available to the public without charge, by public dedication or by royalty-free nonexclusive licensing;" that all inventions in which the Government has any rights be patented unless other means of dedication are employed; and that a "Government Patents Administrator" prepare for approval of the President a program to encourage and sponsor the use and practice of Government-owued inventions by small and new business concerns and report on the extent of use thereof.

Other commentators believe such a policy to be ineffective and wasteful, both of the potentially inventive faculties of scientists and engineers and of the time of patent personnel in creating unused exclusionary rights in patents.

[87] It appears that reluctance on the part of agency personnel to assert any greater right than appears to serve a governmental purpose is indeed at the heart of most problems encountered in carrying out the policy now in effect. This reluctance applies to tbe inventor who seeks to further develop his invention to a commercial form as well as to the local administrator who gathers the facts and initially determines the respective rights of the Government and the inventor. If a patriotic concern for the public welfare be regarded as a primary driving force among Government officials, their efforts in carrying out this policy would be better motivated if they were provided with visible objectives to be served thereby.

[88] E.g., Finnegan & Pogue, *supra* note 16, pp. 956-60, who conclude at 960 that a "middle-ground" approach should be taken. Their specific proposal has been regarded as close to the "license theory," however, and did not satisify the requirement for a uniform policy. A further approach, somewhat closer to "title theory," was urged by the Chairman in *Hearings Before Subcommittee No. 3 of the House Committee on the Judiciary on H. J. Res. 454,* 85th Cong., 2d Sess., at pp. 32-41 (1958).

For a review of the current status of the legislative considerations see *Patent Practices of the Government Patents Board, a Preliminary Report of the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary,* S. Res. 53, 86th Cong., 1st Sess., (1959).

[89] *Hearings, supra,* note 88; the same hill was reintroduced as H. J. Res. 3 in the 86th Congress, but was not acted upon, nor was the alternative proposal of the Chairman set out in the *Hearings, supra* note 88, pp. 41-45, and in *Appendix E of the Preliminary Report of the Subcommittee, supra* note 88; the Foreword (p. iv) suggests that a recommendation from the Bureau of the Budget is needed.

[90] In view of the unresolved conflict between theories ,*supra* notes 88, 89, a further effort was made hy the Bureau of the Budget and the Chairman to frame a hill free of these ohjections. Some agreement between agencies on the central policy expressed in criteria of "middle-ground" type was achieved, but has not yet been recommended hy the Administration.

it is found that an invention bears a direct relation to the official duties assigned to, or undertaken by the inventor as a result of assignments, the invention is held to be subject to a requirement to obtain the entire right. Such a decision generally requires an apparent responsibility closely related to the invention and either that the invention be made partly or wholly during working hours, or that one or more of the named contributions be present in a prominent degree. Former Chairman Dowell testified that the wording in paragraph 1 (a) "shall [obtain the entire right]" is interpreted as "may [obtain the entire right]" in conformity with applicable court decisions.[79] This has been the practice of each Chairman. A direct relation to duty is a prerequisite to finding the Government entitled to all rights.

A further important limitation on the title requirement is found in the second substantive provision of paragraph 1 (b), which states that, although the Government could obtain the entire right under 1 (a), if the Government has insufficient interest in an invention to do so, it shall leave title in the employee, subject to the prescribed license, upon approval of the Chairman. He does not approve leaving title with the employee under this provision when the agency has sufficient interest to file a patent application to protect the rights of the Government, since all agencies must recognize that an invention, despite efforts at dedication, may be patented by someone else without reservation of any right in the Government. If the inventor must file an application at his own expense to protect the public right, if one is to be filed, the Government is not regarded as equitably entitled to require an assignment of the entire right.

Frequently it is reported that the inventor has done all of the work of conceiving an invention on his own time, with no further contribution by the Government than that which arises from a general relation to his duties. In such a case the equities are held to favor the employee, unless it appears that the invention is specifically within a clear duty of the inventor or is a solution to a problem for which he had a responsibility to seek a solution. Many variants of this problem require case-by-case analysis, and the decision must consider all factors which make up the whole picture. The director of a phase of research or development, or head of a group charged with some broad duty, presents a special problem, because, on any principle of implied contract, he may be both contractor for, and performer of, the work he does.

Another common situation involves inventions made wholly on official duty time, but in areas wherein the employee had no general or specific duty to proceed with any investigations or solutions of the problem. In such cases the Chairman usually does not find that the invention bears a direct relation to his duties or was made in consequence thereof. But when an agency report indicates no direct relation to duty and the report nevertheless shows that the employee devoted some weeks or months of official time to the problem, he may construe the facts to indicate that a special assignment of duty prevailed and find the requisite relation to duty with adequate contribution by the Government to bring the case within the paragraph 1 (a) provisions. The problem of what is a special duty assignment, a specific duty, or a general responsibility lies at the heart of each decision regarding title in the invention.

[79] Hearings, *supra*, note 22, pp. 25-26.

IV. Balancing of Equities in Decisions by the Chairman.

A. The Chairman's Interpretation of the Order's Criteria.

An analysis of the early decisions under this Executive policy was made by Dr. Howard I. Forman,[72] who concluded that "[t]he determination of the agencies and the decisions handed down by the Chairman are fast establishing themselves as controlling precedents which . . . should serve largely to standardize the manner in which ownership rights in inventions of Government employees are handled in the future . . . ." This has proved to be the case. In the years since that study the same general policy and approach has been adhered to, but with some changes of emphasis in the light of experience. The decisions of the Chairman are not published [73] but are available within the agencies to provide guidance on the precise point of division between the rights of the employee and of the Government.

There immediately arose in the administration of this policy a basic problem grounded in the form of the Executive Order statement of criteria for requiring an assignment of all rights.[74] These criteria are stated in paragraph 1(a) as a

portionately large percentage of cases. Some other agencies apparently assert title in a much larger number of cases than others, perhaps because of the field of work, or because of the belief that their primary function in research and development is to give out freely whatever results they find rather than to employ them for internal governmental purposes. This divergence of practice for the differing types of research or the differing agency purposes constitutes a degree of nonuniformity in the treatment by the Government of its employees for which a solution is not yet at hand.

[72] Forman, *The Government Patents Board-Determination of Patent Rights in Inventions Made by Government Employees,* 35 J. Pat. Off. Soc'y 95-127, 127 (1953); see also Finnegan & Pogue, *supra,* note 16.

[73] Each Chairman has felt the need to treat agency reports of the details of work assignments as administratively confidential, like other matters of personnel administration, and some Board members objected vigorously to public discussion of cases from their agencies. The factual reports and determinations of each agency have not been released to the general public without consent of the reporting agency, but the substance of each decision is regarded as a matter of public interest and bas not been withheld in any case.

[74] Ex.O. 10096 contains the following paragraph (15 Fed. Reg. 389-391, 3 CFR 292):

> "1. The following basic policy is established for all Government agencies with respect to inventions hereafter made by any Government employee:
>
> "(a) The Government shall obtain the entire right, title and interest in and to all inventions made by any Government employee (1) during working hours, or (2) with a contribution by the Government of facilities, equipment, materials, funds or information, or of time or services of other Government employees on official duty, or (3) which bear a direct relation to or are made in consequence of the official duties of the inventor.
>
> "(b) In any case where the contribution of the Government, as measured by any one or more of the criteria set forth in paragraph (a) last above, to the invention is insufficient equitably to justify a requirement of assignment to the Government of the entire right, title and interest to such invenion, or in any case where the Government has insufficient interest in an invention to obtain entire right, title and interest therein (although the Government could obtain same under paragraph (a), above), the Government agency concerned, subject to the approval of the Chairman of the Government Patents Board (provided for in paragraph 3 of this order and hereinafter referred to as the Chairman), shall leave title to such invention in the employee, subject, however, to the reservation to the Government of a non-exclusive, irrevocable, royalty-free license in the invention with power to grant licenses for all governmental purposes, sucb reservation, in the terms thereof, to appear, where practicable, in any patent, domestic or foreign, which may issue on such inventions.
>
> "(c) In applying the provisions of paragraphs (a) and (b), above, to the facts and circumstances relating to the making of any particular invention, it shall be presumed that an invention made by an employee who is employed or assigned (i) to invent or improve or perfect any art, machine, manufacture, or composition of matter, (ii) to conduct or perform research, development work, or both, (iii) to supervise, direct, co-

The above procedure for appeals applies to a determination either that the employee assign all rights, or grant only a royalty-free license.[60]

E. Petition for Reconsideration of Chairman's Decision.

The employee may also petition for a reconsideration [61] in any case in which the Chairman has decided that the Government is entitled to a greater right than that determined by the agency. These petition situations are considered under the same procedures as for appeals from the agency determination. In this case the Chairman reopens and reconsiders the case as though it had not previously been decided, usually upon a more extensive presentation. He may adhere to, modify or reverse his former decision. The agency may itself wish to secure a reconsideration by the Chairman of his decision to take a *greater* or *lesser* right than that asserted by the agency. Such a request for reconsideration is subject to the same procedure as an appeal. If he is satisfied that a decision differing from his prior decision is required, he may issue a substitute decision, reaffirm on the same or different grounds, or decline to reopen the case. In the light of further evidence by both parties he may find that neither the agency determination nor his decision is sustainable, and he may issue a new decision as the facts then presented may require.[62]

F. Agency Reports.

All specified reports [63] to the Chairman include:

(1) a description of the invention in sufficient detail to permit a satisfactory review; [64]

(2) name of the inventor and his employment status; [65] and

(3) a statement of the agency determination and reasons therefor.[66]

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[60] Upon appeal from reversals of the agency determination in 34 cases 17 were decided in favor of the employee and his decision was adhered to in 17 cases.

[61] A.O. 5 § 300.6 (c). A petition may he made to the Chairman within 30 days, or such longer time as may be approved, of notification of the Chairman's decision.

[62] Upon reconsideration in 18 cases the Chairman has reaffirmed in 8 cases and concurred with the prior agency determination in 9 cases, and modified or reversed both his own and the agency's prior conclusions in one case.

[63] *Revised Procedural Instructions for Submitting Reports Specified in Administrative Order No. 5,* issued by the Chairman Jan. 10, 1955, set out detailed requirements for reporting the information needed by the Chairman in each type of case, based on the experience with reports of the preceding years.

[64] *Id.,* § IV 1. This shall reveal the specific form of the invention, referring to its novel features and permissible variations, to what it relates, and either its construction and manner of operation, its composition, or the procedures involved, according to the subject matter of the invention.

[65] *Id.,* § IV 2. This shall include job-title and grade, or rank, duty station and when the invention bears any relation thereto, a brief summary of his official duties and pertinent special assignments. If the inventor was employed or assigned within any of the categories of research and development (para. 1(c) of Ex.O. 10096) the information shall show the actual relation, if any, between the duties and the invention, since it is presumed that such relation will warrant an assignment unless the relation actually disclosed rebuts the presumption that the Government is entitled thereto.

[66] *Id.,* § IV 3. The pertinent provisions are:

"(a) When the agency determination is to leave title in the inventor, the report shall indicate whether the determination was made pursuant to paragraph 1 (b) or paragraph I (d) of Excutive Order 10096.

"(b) The report shall also indicate when, where and how the invention was actually made. When the invention was reduced to practice by the construction of a model or otherwise, with a contribution by the Government, the report shall indicate whether the

Government to an assignment of the invention. The employee has the right to appeal from this agency determination,[43] which is seldom exercised. He is considered to have waived any such right if he failed to take an appeal within 30 days of the agency's notification to him of its determination not to file, or to publish in lieu of filing.

When the Government is not entitled to an assignment of all rights in an employee invention, which is therefore the property of the employee, the employee may file a patent application at his own expense. Also, when the agency determines that the Government could require an assignment, but has insufficient interest in the invention to do so, it may also leave title in the inventor subject to a royalty-free license to the Government, upon approval of the Chairman, and the inventor may file a patent application at his own expense.[44]

Administrative Order No. 5 requires that each agency determine the respective rights of the Government and the inventor in "any invention made by a Government employee while under the administrative jurisdiction of such agency" [45] but requires routine reports [46] of rights determinations for the Chairman's review only when the determination is to leave title in the inventor under the criteria set out [47] either subject to a royalty-free license [48] or subject to law.[49]

About 500 inventions in which the employee retains rights are currently being reported each year. The number of cases in which the Government receives all rights is not precisely known, since these are not reported.[50] Some agencies have indicated that they have insufficient staff to process more than a fraction of the disclosures actually received, and they release for private action by the inventor those determined to be of lesser immediate value. In most such cases, no rights determination is made unless the employee states that he desires to file a patent application at his own expense.

C. *Appeal By The Employee.*

An employee who has been notified of the agency determination that an invention should be the property of the Government may take an appeal [51] directly

[43] *Supra* note 32.

[44] In most cases the employee relies upon his agency to do this if the agency considers the subject matter of sufficient value to warrant the considerable expenditure of time and effort involved in filing and prosecuting the application. The agency requires at least a royalty-free license in return for this service. The positive assurance of this right provided through the filing of a patent application subject to an executed license provides the justification for expenditure by the Government in the preparation of a patent application and its prosecution to an issned patent, which is in all other respects the property of the employee. The right granted may be stated in the patent if filed under 35 USC 266. It may also be recorded as a separate document, an official listing at the United States Patent Office of such rights being provided for public inspection as set out by Ex.O. 9424.

[45] A.O. 5 § 6 (a).

[46] *Supra* note 34.

[47] *Infra* note 74.

[48] *Id.*, para. 1(b); A.O. 5 § 300.6 (b) 2.

[49] *Id.*, para. 1(d); A.O. 5 § 300.6(b) 4.

[50] The Department of Agriculture determined rights in 526 cases between Jan. 23, 1950 and Dec. 31, 1956, and required assignments in 90% of these cases. The figure for the Navy Department at that time was about 37% as reported by Finnegan & Pogue, *supra*, notes 16. Other departments, e.g. Health, Education and Welfare, may have a very high percentage in the title category, while others, e.g. Post Office may be very low.

[51] *Supra* note 32.

that policy and its administrative workings differing factual circumstances affect the distribution of rights between employer and employee. Just as court decisions recognize on a case-by-case basis the various factors presented, these same factors require individual case-by-case treatment under the excutive policy.[22] Decisions are based on facts as reported by the agencies.

While a review of typical cases from the 3500 decisions by the Chairman would be helpful to those presenting matters for his consideration, more space would be required than is here allocated. This discussion must be limited instead to the broader aspects of administrative policy and procedure [23] described in general terms for those not necessarily expert in patent law matters.[24] A brief treatment of the procedural background is desirable to place the decision function in perspective.

B. Initial Agency Determination.

Under the Order each agency determines for itself when an invention has been made,[25] and by whom. The Chairman is thus not directly concerned with the rules governing originality, priority or patentability. These questions are left to the employing agency which obtains from its employees written disclosures [26] of any inventions made in the course of their work. The agency determines their value to the Government [27] and investigates the circumstances of the origin of those deemed to be significant [28] and patentable.[29]

The agency then prepares a summary of facts in accordance with procedural

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Valley Authority Act of 1933, 48 Stat. 58, 16 USC 831 (d); The National Science Foundation Act of 1950, 64 Stat. 149, 42 USC 1871.

[22] The Chairman has a reviewing function for the purpose of obtaining uniform application of the policy, and in performing this function considers the criteria of the Order in the light of pertinent court decisions as noted in *Hearings Before Subcommittee No. 3 of the House Committee on the Judiciary on H. J. Res. 454,* 85th Cong., 2d Sess., at pp. 25-26 (1958).

[23] Operations under this Order are not regarded as subject to the Administrative Procedure Act inasmuch as the Chairman deals only with Government employees, not with the general public, and holds no record hearing as such.

[24] Agency reports are prepared in most cases by patent attorneys who also may prepare and prosecute patent applications.

[25] Administrative Order No. 5, 37 CFR 300.5 (1951) provides: "Each Government agency will determine whether the results of research, development, or other activity within the agency constitute invention within the purview of Ex.O. 10096." (Note 10, *supra*)

[26] Practical means for encouraging disclosures is regarded as the dominant objective of the patent system, since no law or administrator can directly compel anyone to invent or do original thinking, nor extract constructive products from another person's mind. Hence the effort in most industrialized countries is to encourage disclosures by offering inducements, either of patent ownership or by bonuses, awards, recognition, etc. The agencies involved in research wish to get a maximum of disclosures, whether patentable or not, since these become the stepping stones for further progress.

[27] Disclosures judged to be of no interest to the Government are not usually investigated or processed beyond an adverse decision as to value at the originating agency.

[28] Inventions of highly doubtful patentability and those believed patentable but not significant enough to justify consideration for patenting are usually not reported under the Order, but are often released to the inventor subject to the requirement that he secure a rights determination if he should file any patent application thereon. Agency rules and practices for these evaluations differ according to the agency objectives.

[29] When an invention disclosure appears unpatentable in subject matter, or becanse of prior patents or statutory bars, it is usually dropped from agency consideration and the inventor so notified. No report to the Chairman is made in most such cases, unless the inventor believes otherwise and requests a decision on rights.

II. Basic Considerations and the Development of a Uniform Policy.

Important to any policy for deciding when the Government should own any or all rights in inventions made by its employees are two basic principles appearing often in direct conflict. One is based on sound legal logic and the other on practical considerations for encouraging the making, disclosure and utilization of the inventive concepts.[11]

1. The master-servant doctrine, developed in the common law, holds that when one employs another to perform specified work, and in doing so the employee makes an invention that invention belongs to the employer, for he has done only that which he was hired and paid to do.[12] It is acknowledged that the employee of the Government is in the same situation as any other employee.[13]

2. Disclosures, as of inventions, are the means by which useful devices and discoveries in the minds of individuals come into view for the public benefit, and the enocuragement to disclose is the central aim of any patent system for rewarding inventors.[14] Taking of full ownership by the employer banishes such rewards as incentives either to develop embryonic ideas to practical form or to disclose them when completed.[15]

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[11] The controversy over Government patent policy, relative at least to employee inventions, comes ultimately to a decision between those two solidly based principles. The many who would treat as public property all patents on results of research and development done largely at Government expense see vividly the force of the master-servant relationship, whether the inventor is a direct employee or indirect employee through contract. They see an unjust enrichment to any private party who retains any exclusionary right in a patent on such Government-sponsored effort. It is argued that the public must then pay twice for its products. On the other hand the advocates for inducements to inventors would limit the trend to "socialization" of patents in the interest of enhancing the national progress through personal motivations to disclose inventions and to develop ideas and discoveries into practical form. While it is often recognized that some of the public argument on both sides of this question might be in the interest of possible personal financial gain, the question is nevertheless basic, and deserves the careful weighing of unbiased review as in any other public policy.

[12] A famous dictum of Solomons v. United States, 137 U.S. 342, 346 (1890), confirmed in Gill v. United States, 160 U.S. 426, 435 (1896), Standard Parts v. Peck, 264 U.S. 52, 59-60 (1924). The same view expressed in dictum in United States v. Dubilier Condenser Corporation, 289 U.S. 178 at 187 (1933) which distinguishes that case on principle. In Houghton v. United States, 23 F2d 386, (4th Cir. 1928) cert. den., 277 U.S. 592 (1928), the court acknowledges the rule in the *Gill* aud *Peck* cases, asserts the *Dubilier* rule, but distinguishes the case from the ordinary case of an invention made by an employee, who, while discharging the duties assigned in his department of service, conceives and perfects an invention—the invention is the property of the employee; and holds the Government entitled to an assignment because the employee performed only the work and experiments he was assigned, the idea being that of his superiors, and that no official of the Government was authorized to give away any interest in it.

[13] United States v. Dubilier Condenser Corporation, *supra,* at 191; Gill v. United States, *supra,* at 435; Houghton v. United States, *supra,* at 389.

[14] Art. I, Sec. 8, U.S. Constitution.

[15] While inventions of simple nature may be adapted to manufacture and sale with little change, others require extensive engineering and desigu before they are suitable for marketing. The protection for risk capital to do this, or to create the required wide public demand, through advertising and promotion, is said to remain the major social ohjective for private ownership of patent rights. It is widely urged that Government recruitment and retention of highly qualified engineering personnel is hindered if title to their inventions is not left with employees, who often could command much higher pay in private industry. It is also said that resentment on principle and dissatisfaction with Government employment is engendered if the employee is deprived of inventions which would be his property under pertinent court decisions.

making other discoveries and useful innovations[4] are not included. What then is our policy and toward what objective is it aimed?

If we pause a moment in our thinking on broad policy and look to the inducement offered to individuals who might devise for us some practicable means for harnessing thermo-nuclear power, or some better cancer treatment, we come to a very basic question. Is it our first concern to settle with good legal logic the matter of who owns the fruit that falls freely from the tree of human imagination, or to devise livelier forces to foster quicker growth of tree and fruit? It is the author's view that the need to explore some new personal incentives is as vital to the success of our policy as the need to make sure the man who works the ground and tends the tree receives no benefit which might belong logically to the owner.[5]

It is natural that we look closely at the bargain made by the Government, since Government funds directly support some 65 percent of the research and development in the United States.[6] These expenditures account for about 10 percent of the budget, and are expected to increase. The funds are spent to encourage research, innovations and discoveries[7] as well as to produce new goods needed for defense and peaceful uses. Do we have a national policy oriented to promote the maximum of new and useful improvements through effective encouragement of personal effort? The answer must consider the individual who does the work. He may be hired by a large or small corporation, working under Government contract, or he may be employed in a Government department or facility. Quite similar inducements may serve to drive him to useful discoveries, innovations and inventions, wherever he may be employed. Are the best and the only inducements acceptable in our economy expressed in our laws?

Jan. 17, 1961 that only 27% of the patents are now issued to individuals. A majority are thus inventions of employees who may not be in a position to be reached under the present laws passed to encourage invention pursuant to Art I, Sec. 8, of the United States Constitution:

> "The Congress shall have the 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;"

[4] The scope of protectability has been recently extended to these new fields by some countries. The new German Federation law (1957) merits special study as well suited to present needs. It was published in *Blatt für Patent-, Muster- und Zeichenwesen* (edited by German Patent Office) Vol. 8/9, pp. 218-24 (Aug./Sept. 1957). The area of coverage is much enlarged, including patentable inventions and *proposals for technical improvements.* It is especially notable in setting ont the requirement that employees in public and private service, in civil service, soldiers, and teachers shall be compensated for their inventions and proposals for technical improvement.

Prof. Konst Katzarov of Geneva, Switzerland has studied the new incentives for encouraging technical improvements adopted in some Eastern European countries and he reports some remarkable successes; *The New Structure of the Protection of Industrial Property in Eastern Europe,* 42 J. Pat. Off. Soc'y 596-620 (1960).

[5] It is the individual inventor who ultimately must nurture the tree, though the costs may be paid by the Government, analogously considered the owner. What he may retain of the fruits produced and what must go to the public warehouse is a matter of administration for our present consideration.

[6] Expenditures for 1959-60 were about $12.4 billion, $9.4 billion by industry, $1.25 billion by colleges, universities and non-profit institutions and $1.8 by Government ageucies. The Government supplied, directly about 57%, 59% and 100% of these amounts, respectively, totaling about $8 billion. Nat Sci. Found. Bulls., *Funds for Research and Development in the United States 1953-59.* NSF 59-65 (1959), NSF 60-43 (1960), and press releases NSF 60-146 (Aug. 24, 1960); NSF 60-160 (Dec. 6, 1960).

[7] Total United States funds for basic research estimate for 1959-60 were $1 billion, NSF-60-146 *supra,* note 6; applied research for 1947 was 21%, according to Nat. Sci. Found. survey, *Funds for Research and Development in Industry 1957,* NSF 60-49 (1960).

and regardless of where or by whom they were made, and to determine as soon as feasible whether they should be patented, published, or laid aside without action—this authority being removed from the agencies. This suggestion, if implemented, would probably result in more uniform treatment of Government-owned inventions; effect savings by concentrating patent activities in a single group; tend to reduce the number of patent applications filed; increase the number of inventions published and, it is to be hoped, bring about commercialization of those inventions which the public, and industry, would find useful but which are not now being exploited because of the lack of patent ownership in one person or corporation.

If the reader likewise concludes that the proposal advanced lacks detail and omits reference to many facts and circumstances which have bearing upon the feasibility of the plan he will likewise be justified. The number of Board members, nature of its staff, location, etc., are not suggested.

It is believed, however, that in this changing world in which governmental participation in research, both here and abroad, is increasing, and national patent policies are being formulated, it is high time to pull loose ends together and that consideration of a central authority should be seriously undertaken.

It is the writer's belief that the one result of beneficial nature which would follow establishment of such a Board would be a substantial decrease in the patenting of Government-owned inventions. This would be helpful in that the cost of preparing such applications would be reduced and the Patent Office spared much trouble and expense. The effectiveness of publications as defensive documents could be enhanced by legislative action if found to be necessary for the full protection of the Government.

A Board such as that proposed might also be vested with authority to deal with comparable organizations of other nations, cooperating with the Department of State in international negotiations. It might usefully serve the nation by encouraging invention in various ways, this being of the first importance in this day of technological competition. If established, it might be helpful in eliminating the possibility that research efforts be inadvertently duplicated, although primary responsibility to prevent this from happening may be placed elsewhere.

Everything considered it is believed that substantial advantage may result from the establishment of such a Board or authority and that serious study is warranted.

the patent against possible infringers and also containing clauses for any necessary safeguards for the public interest. Such assignment would require competitive opportunity to all interested persons subject to applicable anti-trust considerations. This proposal, if implemented, contemplates maximum use of the private enterprise system in the exploitation of inventions developed by the expenditure of public funds and would seem, possibly, to offer a successful way out of the present and ever-increasing difficulties in which we find ourselves. It is worth a try.

If Government-owned inventions and patents are to be assigned to private individuals, how shall this transfer of title and responsibility be accomplished? Obviously, if such transfers were to be made by the several agencies all acting independently of each other, non-uniformity of treatment would be the rule and many difficulties would eventuate. Obviously, the selection of one or a small group as the recipient of a patent by assignment from the Government, with full right to enforce it against others, will be an operation which must be surrounded with proper safeguards and, even so, will inevitably bring some criticism to those who conduct the negotiation on behalf of the Government.

It is clear therefore that a central authority, knowledgeable, capable, and equipped with a statutory charter will be needed if the policy suggested is to be adopted. A central authority or management board should be established and such board should be given not only the right to dispose of patent rights to which the Government has acquired title but should perform other functions as well. This Board should, it is believed, be composed of persons well versed in science and technology, be well advised legally, and be a continuing body of professional employees of Government. It should be authorized to perform the following functions:

1. With respect to patent and invention rights, work with agencies in drafting research contracts, in an advisory capacity. While the agency, upon which rests the responsibility of seeing to it that the desired research is conducted satisfactorily and on time, cannot have imposed upon it a crippling series of restrictive rules, a central management Board of permanent nature could be very helpful to any agency in dealing with contractors.

2. The Board should review all inventions to which the Government acquires title, regardless of where these inventions originated, and determine whether such inventions should be (a) patented (b) published, or (c) neither published nor patented.

Presently each agency determines its own policy in this respect, but it is believed that the public interest will be served if this authority and duty were transferred to a central Board.

Such a body could scrutinize all inventions to which the Government takes title, whether these inventions are chemical, electrical or mechanical in nature, authorize novelty searches when appropriate, consider in advance the possibility or impracticability of transferring title to any future patent for that invention to a single manufacturer, and give all other pertinent circumstances full consideration before deciding whether the invention should be patented or treated otherwise.

funds for their implementation. These programs are independently prepared and the heads of agencies make separate presentations to the Congressional Committees and funds, in the amount requested (or in lesser amount) are granted. The agency head then has the responsibility of promptly proceeding to carry out the program which he has represented to be essential.

In order to have the research promptly and efficiently accomplished the bureau or department must proceed without undue delay to conclude a business arrangement with an organization which is willing and able to do the required work. Negotiations may of course be had with a number of organizations which are equipped to perform the research desired whenever it is possible to find more than one which has the skill and willingness to undertake the work. However the research organizations with which the department or bureau must of necessity negotiate vary widely in their makeup, and in many respects. On one extreme, some are large, long established, well-financed organizations with much background knowledge in the field of the research to be done, while others are quite the reverse—small, possibly inadequately financed, recently established and without background knowledge in the field.

In between these two extremes there are a large number of other research organizations with widely varying abilities, equipment, financing, and background information. The department or bureau may be confronted with the possibility of having the needed research undertaken by any one of a number of such organizations or it may be found that, by reason of the nature of the research to be conducted, a contract must be negotiated with one organization only, that one having the peculiar skills known to be necessary for the accomplishment of the research program in the time period allowed or desired.

The Congress will no doubt recognize the fact that the bureau or department must of necessity have some freedom to negotiate if it is to succeed in securing the service needed. The agency is not often in position to impose its will upon the contractor or demand that the contractor agree to accept any precise formula for the division of patent rights between his agency and the Government.

If it be conceded that the contracting officer must, in order to successfully function, be permitted some leeway to negotiate, it will be unlikely that the Congress will rigidly confine him. It has been shown that the rigidity of the NASA law is a handicap to those who administer that law. It has been shown that the Department of Defense, the activities of which are not controlled by restrictively worded formula, has been successful in negotiating contracts with groups well qualified to conduct the research programs which the Department finds to be so necessary. The Congress therefore will unquestionably proceed with caution in any legislative treatment of the subject lest the all important defense efforts be hampered.

It is hardly necessary to repeat here what has been said so many times about the value of the patent system in the economy of the nation, but a few words of comment may not be untimely. Patents have served well to encourage many generations of our citizens to put forth the extra effort and expend the time and treasure necessary to develop the answers to many problems of technological nature.

Government should be given an opportunity to testify, without being confronted with preconceived and prejudged positions which may have been adopted by the personnel of the committee or committees involved.

3. Formulate and pass legislation to establish a national policy with respect to the determination of the property rights to inventions made by contractors under contracts financed by the United States Government which will protect the public interest, and the equities of the contractor, which will promote the sound economic development of the Nation in accordance with the principles of the American system of free enterprise, and which will provide the flexibility necessary to avoid imposing artificial and unnecessary restraints on the ability of any Government agency to carry out the responsibilities assigned to it.

The author, of course, hopes and believes that such a national policy will be based on the principles which he has attempted to expound in this article.

that all of these arguments could, if true, be equally applicable to the patent system itself. It is quite apparent that these arguments are merely the same clichés with which opponents of the patent system have belabored that system for many years. Not even the most dedicated supporter of the patent system can claim that some patent owners have not misused their patents. By the same token, none of us who believe in the institutions of marriage and motherhood can claim that some married couples and some mothers have not abused those institutions. Certainly the citation of an occasional horrible example cannot be used to sustain the generality of the criticisms which have leveled against the patent system.

It is not possible, in an article of this length, to refute all the above accusations. Each one has been answered in detail many times by knowledgeable supporters of the patent system. However, a few observations as to how some of them relate to patents arising out of Government work may be pertinent.

The antitrust pressures with respect to patents have been so intense that today every patent owner lives in a fish bowl. The antitrust laws themselves provide such adequate protection against misuse that the slightest deviation from strict compliance with the spirit and letter of the law subjects the patent owner to the danger of having all of his patents confiscated and destroyed. Insofar as this author is aware, this kind of penalty has not been assessed against other classes of property. At least partly because of this danger, patent owners today use their patent rights with a higher degree of circumspection than in the case of any other kind of property. Inventions developed under Government contracts will, of course, find their greatest use in Government procurement with respect to which the Government has complete freedom to use the patents covering such inventions. Therefore many manufacturers will be making and selling goods to the Government using the inventions freely and without compensation to the patent owner. It is difficult to see how, under these circumstances, any kind of a monopoly position could be attained by the patent owner.

One of the truths which the Mitchell Subcommittee which conducted the House hearings on the Space Act of 1958 [15] recognized is that as to rights in patents ". . . the smaller business would stand to gain more than the larger one since the economic strength of the latter may be sufficient without patent protection whereas the former are aided by and derive economic strength from the rights afforded by the patent system."

If one believes in the basic soundness of the American patent system, one is led to the inevitable conclusion that to adopt an invariable rule under which the Government takes title to all inventions resulting from Government contracts would be to attack and weaken the patent system. While those, who are convinced that the patent system is an anachronism and should be substantially modified, are not likely to be influenced by the arguments presented in this article, others, who believe in the efficacy of our patent system, will recognize

[15] Report of the Subcommittee on Patents and Scientific Inventions to the House Committee on Science and Astronautics, 86th Congress, 2nd Sess. (1960) p. 16.

fringement. We all know that there is no certainty that the patent will be upheld by the court and therefore the ownership of the patent right merely creates the possibility of being able to achieve the above result. However, that possibility is usually sufficient to enable a business to obtain the necessary risk capital and to stimulate such business to undertake the effort described above.

We have seen that patents do not constitute the sole stimulus for the making of inventions. Likewise a number of new products may be created without the patent stimulus. There are some products which are difficult to copy. As to others, the immediate demand is so great that, even with some competition, a sufficiently high price can be obtained during a relatively short period to justify the development expense. Some products may be relatively cheap to develop and the advantage of being first on the market may enable the company, which introduces them, to sell enough during a short initial period to make the effort a profitable one. Here likewise, we must recognize that while, without the patent stimulus, *some* new products will be generated, nevertheless, a substantial number of potential new products will *not* be developed and made available to the public. It is precisely in the latter category that we find the high-risk type of product which, if successful, often forms the basis of a new industry or a greatly expanded growth of an old industry.

There is another growth phenomenon arising from the patent stimulus. We will note that a business, which successfully creates a new invention, develops a corresponding product, and markets the product so as to derive a substantial profit from the enterprise, is a creative business. Its scientists and engineers are the type of persons who like to create new ideas. Inevitably we find that, whenever such a project is successful, a significant proportion of the profits are "plowed back" into further research and development resulting in improvements, more new inventions and more new products. Thus a successful patented invention stimulates further inventions and economic progress.

If we are content with a moderate or mediocre rate of economic growth for the United States and are willing to tolerate a minimal development of our defense program, then, of course, we need not concern ourselves with whether or not Government contractors retain commercial patent rights to their inventions. If, however, we would like to see our Nation grow with the vigor and speed which the free enterprise system is capable of producing, we should be deeply concerned each time our Government decides to take such rights away from the industrial organizations which create the inventions involved.

IX. Government Cannot Make Effective Use of Patent Title.

Our analysis of the problem would be incomplete if we did not examine the question of whether or not the Government itself, by taking title to contractors' inventions, is able to produce a greater public good than the losses inherent in taking such rights away from the contractor. In the first place, the Government now invariably gets an irrevocable, non-exclusive, non-transferable, royalty-free license to practice or cause to be practiced by or for the United States Government each invention made under any contract calling for experimental, developmental or research work. This means that anyone, anywhere

patent stimulus and how it operates. Possibly, some discussion of this aspect of the problem might be helpful.

VIII. Nature and Operation of Patent Stimulus.

The possibility of obtaining a patent has always been recognized as an effective stimulus for the making of inventions. However, it is clear that it is not the *only* stimulus operating in this area. Inventions were made long before patents were thought of and undoubtedly inventions would continue to be made if we were to abolish the patent system. Human thirst for knowledge, the desire to enhance one's public reputation as a creative scientist or engineer, the necessity for keeping one's goods in step with one's competition, and the commercial advantage of being the first to introduce a new device on the market, are some of the stimuli which may result in the making of inventions without the aid of the patent stimulus. Nevertheless, we must recognize that if we destroy any significant stimulus, such as that afforded by patents, we *reduce* the rate at which inventions are made and, in addition, certain kinds of inventions cease to appear.

Patents are most effective in generating inventions of the type which require a large investment of risk capital to originate, develop and market, and which likewise require a substantial period of time in which to recover the capital invested and to make a profit commensurate with the risk undertaken. This is the type of invention which often forms the basis of a whole new industry and is the kind of invention which would first tend to disappear with the elimination of privately owned patents.

Let us consider how the patent stimulus to invent operates in the case of Government research and development contracts. If a contractor takes such a contract and assigns his creative scientists and engineers to carry out the tasks involved, the chances are that these persons will make inventions because of their interest in the tasks themselves, whether or not the contractor can obtain any patent rights. There is no way, in a case of this kind, of estimating to what extent, if any, the lack of patent incentive operates directly on the engineers and scientists to discourage them from making inventions. Some experts believe that such discouragement is not inconsiderable.

What about the contractor himself? It is he who must make the decision of whom to assign to doing the work under the contract. If he is a businessman who believes that the future health and growth of his business depends on his creating new commercial products to supplement his Government business or to replace it, should the Government decide to cut back on its procurement of goods from him, he is met with a very difficult problem. He knows that there are very few, if any, products developed for Government use which can be introduced and sold commercially without a substantial degree of change.

There is very little possibility, for example, that he will find commercial customers who will want to buy guided missiles or even radar sets of exactly the same type as the Government purchases for its battleships. Even where the device is generally of a type which may have a commercial market, the Government form is usually so expensive, because of military requirements, that a great deal of revising must be done to bring the price down to a level at which commercial customers would be willing to purchase the device. It

conscionably low price. The fear motive, in my opinion, is relatively minor and suppressed but, under conditions of stress such as were present in connection with the hearings on the Space Act of 1958,[14] it does come to the surface.

A third and by far the most important and dominant motivation for the taking of a research and development contract is the hope that such a contract, when successfully carried out, will result in the contractor being able to obtain procurement contracts from the Government for a supply of the goods thus developed. Here the industrial contractor is engaged in his normal function of making and selling goods at a profit. It is this type of activity which enables him to stay in business.

As the complexity of the goods which the Government purchases increases, it becomes more difficult for any contractor to sell his goods to the Government unless he has participated in the development of the goods under Government research and development contracts. For example, if one contractor were to develop an instrumentality entirely on his own, and a competing instrumentality were developed by a competitor under a Government research and development contract, the overwhelming chances are that the Government would select the latter for procurement. In any case, it is almost certain that no industrial company which relies to a substantial degree on its Government business could hope to stay in business unless it fought for and obtained a significant number of research and development contracts.

It should be recognized that there is no certainty that the originator of a new device under a Government contract will obtain any of the follow on business. The practice is for the Government to obtain unlimited rights to use all data generated in carrying out the work under the contract and also a free license under all inventions made in doing the work so that the Government is free to use both the data and the inventions in procuring any goods from any other source. Even in the present controversy, industry does not propose to diminish such rights flowing to the Government.

A fourth motivation to undertake research and development work for the Government arises from the fact that in doing such work the contractor adds to the knowledge and competence of his developmental and engineering groups. To the extent that he obtains interesting developmental projects, he is also able to attract to his employment a larger and more competent group of scientists and engineers. The accumulated competence of his scientific and engineering people make it easier for him to obtain further Government business, but equally as important to many contractors is an increased ability to improve their commercial products and to generate new commercial products.

A fifth but by no means the least motivation in cases of this kind is to be found in the hope that in doing research and development for the Government, the contractor may be able to make an invention which might form the basis of a new or improved commercial product and on which the contractor will be able to obtain the commercial rights to a patent on such invention. It is this latter hope which the present drive for the Government to take title to all inventions made under Government contracts threatens to destroy.

Coupled with the drive toward Government ownership of all patents on

[14] *Supra*, Note 4.

1951. These refunds represented Board determinations in 98 separate renegotiation proceedings, each for a fiscal year of the contractor involved. The study shows that *before* renegotiation the average profit on sales under CPFF and CPIF contracts was 4.9%. This of course was before the application of taxes. Mr. Coggeshall stated that the refund determinations made on all of the contracts studied represented 15% of profits. We can assume therefore that the profits on the CPFF and CPIF contracts were reduced by this percentage. Thus, after negotiation, the profits on the cost-reimbursement contracts were about 4.17%. When we apply the federal corporate income tax percentage of 52%, we find that the return on sales for these types of contracts was not in excess of 2%.

Most of the goods which the Government purchases are procured under "fixed price", "price redetermination", and "fixed price incentive" contracts. Mr. Coggeshall also testified that the average profit on sales before renegotiation was respectively 18.3%, 10.6% and 8.8% on these types of contracts as compared to the 4.9% on CPFF and CPIF contracts. Judging by these figures alone, it would appear that Government contractors have been obtaining profits from about two to four times as much on their sales of goods as they have from their research and development work.

It has been pointed out by others that the risk involved in a cost-reimbursement type contract is minimal and, therefore, that the contractor should not expect as high a profit as in the case where he assumes a greater risk. Of course this aspect of the problem is irrelevant to the question of whether or not the contractor is "paid" to make inventions. It will be pointed out below that research and development contracts are taken for other reasons than to make a monetary "profit" from such contracts. However, it should be pointed out that in research and development contracts lack of risk merely represents a high degree of certainty of the monetary results. For example, the contractor in a cost-sharing contract may know with certainty the amount of money he will lose. His risk of losing more is low, but his chance of making a profit is nil. Likewise, in other cost-reimbursement contracts the contractor is fairly sure he will not lose too much money, but he also knows with certainty that if he does get more than he spends, the "more" will be minimal.

In his testimony, Mr. Coggeshall also pointed out that the percentage of profit on sales is not the only nor the most significant factor to determine whether an activity is "profitable" to a company. Another traditional method of measuring profits is return on net worth. He pointed out that in the case of fixed price incentive contracts, although the profit level was the lowest of the fixed-price contract cases, the return on net worth was greatest because the contractors involved were using mostly Government facilities rather than their own. In Mr. Phelan's testimony, before the Senate Procurement Subcommittee,[13] one of the factors carefully considered, in determining which prospective contractor for a research and development contract possesses the highest technical competence and therefore should get the contract, is "Availability, from any source, of suitable test or other facilities." Obviously, if the Government were prepared to supply the facilities, this would not be a factor to be considered. It is quite clear that the contractor must already have them available before he can obtain a research and development contract. The result is that, in research and develop-

[13] *Id.*, Part I, p. 94.

Act of 1958 [7], Dr. DuBridge, President of California Institute of Technology, and Dr. Killian, President of Massachusetts Institute of Technology, testified but said nothing about the title to inventions. Undoubtedly, any income which a non-profit organization could obtain from the commercial licensing of patents on inventions which it makes under Government contracts would be very welcome. However, if the problem were one which involved only non-profit organization inventions, there might be less opposition to the Government taking the exclusive title than in the case of industry. The author is not suggesting that the disposition of patent rights should be different for non-profit organizations than for industrial organizations. Most industry representatives would support the proposition that private, non-profit organizations should be entitled to the same rights to their inventions as industry.

V. Government Seeks Special Values in Placing Research and Development Contracts with Industry.

It must be obvious to the Government that, if it were to confine its research and development work to its own laboratories and to non-profit organizations, the problem of what to do with the inventions which result would be of a different character and of smaller magnitude. Why, therefore, instead of doing so, does the Government come to industrial concerns to do engineering, research and development work? It must be that the Government believes that the industrial concern has something of value to offer over and above that which the Government can obtain from the non-industrial organization. The National Science Foundation places about 99½% of the dollar value of its contracts with universities but it does place about ½% with commercial organizations.[8] As Mr. Hoff, General Counsel of the National Science Foundation testified, "We go to the private concerns because they are the ones that have a peculiar competence in that particular field . . ." [9]

Mr. Phelan, Assistant Director for Procurement Policy, Office of Assistant Secretary of Defense (Supply & Logistics) testified,[10] "A research and development contractor would usually have to be selected on the basis of special skills and exceptional facilities in much the same manner that an individual would seek the services or professional advice of an expert."

The Department of Defense in the Armed Services Procurement Regulation [11] details the requirements for contractors with whom the DOD places research and development contracts. From this regulation we see that some of the things which the Government seeks in placing such contracts with an industrial concern are: special background knowledge and capabilities, demonstrated creativity in the area to be investigated, special facilities adapted to per-

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[7] Hearings before the House Committee on Science and Astronautics, 86th Congress, 2nd. Sess. on H.R. 9675.

[8] *Id.* Note 5, p. 194, Statement of Dr. Alan T. Waterman, Director, National Science Foundation.

[9] *Id,* p. 197.

[10] Hearings before the Procurement Subcommittee of the Senate Committee on Armed Services, 86th Congress, 2nd Sess. on A study of military procurement policies and practices as required by Section 4 (a) of Public Law 86-89, 73 Stat. 210, 211 (1959).

[11] ASPR 3-107.6.

invention throughout the United States.[2] A substantially higher degree of novelty must be involved than in the case of a trade secret. The novelty must be sufficient to involve the special quality of "invention" which to date has escaped all attempts to be expressed in any concise scientific definition.

Practically the only quality in common between trade secrets and patents is that they both require some degree of creativity or novelty in order to be effective. Beyond that, however, they are quite different. Trade secrets are "secret", patents are "open". Trade secrets are enforceable only against those who obtain knowledge of the secret from its owner under circumstances which would make it inequitable for them to use or disclose the secret to others without the owner's permission, whereas patents can be used to exclude anyone who intrudes into the area defined by the scope of their claims.

III. NATURE OF INDUSTRY.

When we talk about "industry" in connection with patents and trade secrets, we are not dealing with a simple homogeneous organization but rather with a complex mass of individuals and businesses, some of whom are joined together in trade associations, committees and professional groups. The businesses involved are of all sizes from the small one-man company to the giant corporation. Some are highly creative in the generation of new ideas and inventions. Others do their work in the manner in which they have been taught by others without ever generating any new techniques or new devices and often do very well at it. There are businesses which do very little, if any, business with the Government and as a result are not at all concerned with whether the Government or the Government contractor gets rights to the inventions and information involved in Government contracts. Likewise, there is the Government "captive" business, all of whose work is done for end use of the Government, which has no intention of doing anything else, and to which it is completely immaterial as to whether or not it obtains commercial rights to such inventions and information. Some of the individuals and businesses involved are concerned solely with their personal economic problems, but an increasingly large percentage are deeply concerned with the effects which the use of patents and proprietary information have upon the economic well being of their country. Fortunately for the United States, we do have a considerable number of members of industry who exhibit a high degree of responsible industrial statesmanship in dealing with intellectual property.

He would be rash indeed who would attempt to assume the role of a spokesman for the complex organism which we call industry. The author of this paper must disclaim any such role and can only report how some individuals feel about the subject and offer some observations and suggestions of his own.

We should be careful to distinguish between industrial and non-industrial organizations. An industrial organization is one whose principal activity is the furnishing of goods or services to its customers at a profit. Unless it makes a sufficient profit to invest in future growth, it stagnates and dies. The profit motive is the fundamental characteristic which distinguishes the American free enterprise system from other systems such as, for example, that developed by the Soviet Union. This motive constitutes the basic stimulus which gives life and vitality to the American system. A non-industrial organization is

[2] 66 Stat. 797 (1952), 35 USC 154.

have full meaning. The facts as to motivations of research workers undoubtedly will be looked into.

Finally is another group—those manufacturers who prospectively might compete commercially with the company which conducted the research and, let us assume, has received the patent. It would not seem unreasonable to urge that all manufacturers should be able to compete, perhaps on an equal footing, in commercializing, and thereby profiting from, the results of research which has been conducted at the expense of public funds. The question is whether that proposition is sound or is in reality simply a plausible ground for a system of adjustment, such as compulsory licensing. The facts, which only the Congress can completely survey, will show the answer, but it may come unexpectedly to those investigating the facts to find how many companies, small businesses included, when offered such equal opportunity to manufacture without patent restrictions, will deny they want it in preference to the alternative prospect of owning patents on inventions they themselves may make in the future under Government research contracts.[9]

The Government Patent Policy Study Committee was formed pursuant to a resolution of the National Council of Patent Law Associations with a directive to study existing and proposed policies as to the disposition of patent rights on federally financed research and to attempt to develop sound principles applicable to the formulation of such policies. The Committee will try to deal, in its study, with the function of the patent system as an adjunct of private commercial enterprise; with the sovereign rights, liabilities, and immunities of the Government; and with the ingredients of the public interest in the fruits of Government research. As part of its study, the Committee will seek to acquire case histories relevant to the subject. It may, if its findings justify such action, venture to propose legislative measures, if needed, consistent with its conclusions, to assure that the patent system keeps pace with the times. The Committee recognizes that this is a subject not for dogmatic but for open and inquiring minds and, in that spirit, hopes to make some contribution to the coming debate.

[9] As to the safeguards of the present antitrust laws against the build-up of abusive patent monopolies on the fruits of Government-sponsored research where contractors get the patents, see Keeffe and Lewis, *The Department of Defense Patent Policy at the Crossroads; an Argument for the Retention of Traditional Incentives,* The Catholic University of America Law Review, Vol. X No. 1 January 1961, p. 22.

pay for patents in the first place. In such a reconsideration the *patent* right to exclude must be distinguished from the *invention* which the patent covers.

When the Government contracts for certain research, it does so because it has a technological need to be supplied or problem to be solved. The invention is the imaginative creation which grows out of the research work and which the contractor tenders as the solution to the problem. That is what the Government sought by the research contract. The right to exclude others for a time from the commercial use of the invented thing obtained by patenting it, is a different matter entirely. When it comes, therefore, to an evaluation of Government purchases of research, the separability of the two forms of property is to be observed. Considerations of economy of Government research procurement would lead to the inquiry whether it need buy more than the property it wants and can effectively use, that is, the invented thing.

These considerations seem to show that the question whether patents should automatically be assigned to the Government by the contractor as a matter of fair dealing in the delivery of what has been paid for involves more than meets the eye and presents basic questions which are not involved in the equities of commercial research contracts.

But even though it may be concluded that no parallel with commercial research contracts exists, that is only a part of the question, in fact perhaps the smaller part.

Many members of industry, although not all, want to acquire the patents on inventions resulting from their participation in Government research. If they want the patents, they will do something to get them. First, they will take Government research contracts which they otherwise might not, either at the same price, or, in instances, at any price. Second, having taken the contract, they can perform it to the best of their capabilities without need to separate their private from their Government research projects for fear of patent consequences damaging to their private industrial programs, as might be the case if a Government research project were assigned to research workers already engaged in a commercial project along the same lines. These considerations would suggest that the ownership of patents which contributes most to Government research is in fact private ownership. If that is the case, it should be a prominent if not controlling factor in the decision of Government patent policy. In these days, nothing short of our best research effort will do, and it may be that the utilization of the incentives of the patent system is a necessary step toward that goal.

We have considered the patent needs of the Government and some of the motivations of the contractor, both as relate to Government research and procurement. There is still another interested party to the controversy—the private consumer.

Frequently, although by no means invariably, the invention which has resulted from Government-financed research may be used, after suitable adaptation, as a commercial commodity for which a private consumer demand exists or can be generated. The consumer, who is also the taxpayer who paid for the research, is interested in the availability of the commodity on the market. That demand cannot be satisfied by the Government, and usually it will not be satisfied by industry unless there is a profit to be gained from doing so. The margin of profit required depends upon the needed investment of risk capital in perfect-

to do so in court.[4] Certainly it may also be said that if the employer, while able to compel such an assignment, for some reason, absent a consideration, does not do so, he is giving away something to which he is entitled.

It would seem, furthermore, that the equities of these propositions should still hold regardless of the parties involved, and from these considerations one can readily take the last step and decide, without hesitation, that they apply equally well where the Government becomes the employer and the employee is a research corporation under a research and development contract.

Therein lies the plausibility in the proposal that the Government should own all patents on research which it finances. But its weakness lies in the last step which, while perhaps the easiest to take, in fact required the greatest deliberation, for several reasons:

1. As a preliminary, it is to be observed that a patent is a grant by the Government of a right, for a limited time, enforceable by court action, to exclude others from making, using, or selling the invention which the patent covers.[5]

We are discussing, therefore, ownership by the Government of a right of exclusion which the Government itself granted. Whether or not that aspect should dictate any difference in principle as to what is a fair disposition of the patent, we need not now pause to inquire into, other than to observe the point as an indication of the nature of the property right under discussion.

2. Ownership by the Government of the right to exclude others, that is, the right to exclude all private persons and industries from the utilization of an invention with the necessary consequence of requiring suit by the Government against its own citizens and industries to stop commercial use of inventions, opens a most complex question as to what the Government may properly do by way of policing purely commercial activities. If the Government does nothing to enforce the patents it owns, industry may safely ignore them. The fact is it has never brought suit for patent infringement against any one. Industry knows that and acts on it by paying little heed to a Government-owned patent. As a consequence, the invention in effect becomes an unpatented one.

3. The inducements inherent in the operation of the patent system in private enterprise which, in prospect, gave birth to the system and, as realized, have been responsible for its success, have little bearing on the functioning of patents in the hands of the Government.

One inducement is the incentive to invent which comes from the hope of getting a patent. A research company with a commercial objective [6] many times would not undertake research without the prospect of being able, by obtaining a patent, to avoid competition in the commercial results of its research until it is able to enjoy a market advantage for a few years in reimbursement for the gamble of its research and initial marketing investment. But the United States

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[4] See Standard Parts v. Peck, 264 U.S. 52, 59, 60 (1924).

[5] Ownership of a patent does not purport to give the owner any right to make, use or sell the invention, as the grant is only of the right to exclude others from doing so. See 35 U.S.C. 154.

[6] The patent statutes define the categories of patentable subject matter and thereby exclude from the operation of the system scientific discoveries of basic research in areas of interest both to the Government and industry. Probably only a fraction of the Government research dollar goes for inventions of a patentable nature.

likely, often prevent the results of research from reaching the scientific community and the public.

Nor is there any support for such a policy in the contention that it would increase employee incentive, by no means a certain result. Employee incentive is extraneous to this problem. The basic consideration here is the Department's fulfilment of the research missions entrusted to it by Congress. It is, of course, helpful to this mission that employees be provided with incentive, but not at the sacrifice of the ultimate goals of research programs. The solution to the employee incentive problem must be found through other means which are consistent with the basic purpose of Government research such as granting significant incentive awards and promotions for achievements.

V. The Future Development of the Department's Policy.

To date, the Department's policy has served both to protect the public interest and to avoid discouragement of the researcher, whether employee, grantee or contractor. This is not to say that the policy should not be constantly reexamined and reappraised in the light of our expanding experience. Whether the Department should press for more protective patenting, or whether consideration should be given to incorporating in cancer chemotherapy contracts with profit-making organizations provision for additional compensation in exchange for retention by the Government of all invention rights, or whether in any case, the policy should encompass a provision under which the Government may recover back its research and development costs out of the royalties a contractor realizes from the sale of inventions developed under a Government contract [36] are all questions beyond the scope of this article. Undoubtedly, however, these and others will have to be met and resolved in the days ahead.

[36] The FAA which has adopted a general policy of retaining all invention rights in its contracts for research and development, goes even further and provides for recovery of development costs. We understand that this policy has been accepted by industry; at least, no contracts have been refused. Such a recovery arrangement is also utilized in the United Kingdom. See address of Robert A. P. Guest before the FBA and BNA Briefing Conference cited at n.30, supra.

adequacy of quality.[34] At the same time, the Department's policy and the contracts executed pursuant thereto provide reciprocal protection against precipitate Governmental action which might destroy rights to which a contractor might reasonably be entitled.

Summarizing, the criteria employed by the Department for the disposition of invention rights in the field of employee inventions, research grants, fellowships, and research contracts are designed to foster the dissemination of the scientific and technical information gained thereby and to insure that the benefits of such work will be available to the public.

III. The Department Owns Patents Which Are Held for the Protection of the Public

The reader should not assume that by reason of what has been said the Department does not own and administer patents. The Department's patent interest is largely in the area of protective patenting, protecting against the acquisition of patent rights exclusively for private purposes, and there have been instances in which the Government sought and obtained patents motivated by a need to exercise control, *e.g.*, the need to restrict production of a synthetic narcotic having addiction liability, and to assure a product of adequate quality.

It will be observed that the magnitude of the research program is not proportionately reflected by the number of patents and licenses issued. This is in great measure due to the Department's policy of dedication of inventions through publication. Another factor is the Department's emphasis on basic rather than applied research, since the former does not generally produce the number of inventions, whether patentable or not, that might be expected from the scope and depth of the research investment. An additional factor is the time lag between appropriation for and culmination of the research objective in the laboratory. The recent intensification of research activities may be discerned by comparing the NIH research grant appropriations for 1951 with that for 1961.[35] It is anticipated, consequently, that the full impact of the

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[34] Compare, British Patents Act of 1949, Section 41.

"41.—(1) Without prejudice to the foregoing provisions of this Act, where a patent is in force in respect of—

(a) a substance capable of being used as food or medicine or in the production of food or medicine; or

(b) a process for prodncing such substance as aforesaid; or

(c) any invention capable of being used as or as part of a surgical or curative device.

the comptroller shall, on application made to him by any person interested, order the grant to the applicant of a license under the patent on such terms as he thinks fit, unless it appears to him that there are good reasons for refusing the application.

(2) In settling the terms of licenses under this section the comptroller shall endeavor to secure that food, medicines, and surgical and curative devices shall be available to the public at the lowest prices consistent with the patentees deriving a reasonable advantage from their patent rights.

(3) A license granted under this section shall entitle the licensee to make, nse, exercise and vend the invention as a food or medicine, or for the purposes of the production of food or medicine or "as or" as part of a surgical or curative device, but for no other purpose."

[35] NIH Research Grant Appropriations 1951—$29,625,642. NIH Research Grant Appropriations 1961—$277,625,000.

trolled by the Government for the public benefit. The criteria for determining domestic rights to employee inventions[27] provide for flexibility in making determinations respecting title to employee inventions based upon a consideration of such factors as: (1) the difference between employees engaged and those not engaged in research; and (2) the differences in the degree of latitude given to employees to select their own lines of investigation.

Part 8 of the regulations governs inventions resulting from research grants, fellowship awards, and contracts for research. As to research grants, the regulations provide:

> That the ownership and manner of disposition of all rights in and to such invention shall be subject to determination by the head of the constituent unit responsible for the grant.[28]

The criteria upon which that determination is to be made, set forth in Section 8.2,[29] are similarly calculated to secure wide availability of the invention.

However, where a grantee institution has an established patent policy and its objectives are consonant with the policy objective of the Department, disposition of invention rights may be left with the grantee by the head of the operating agency making the grant provided a formal agreement can be reached between the Department and the grantee which then governs invention rights arising under all grants to that institution by that operating agency of the Department. Such agreements are executed only where there is assurance that any invention resulting from the project will be made available to the public without unreasonable restriction or excessive royalties.[30]

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[27] The criteria set forth in section 7.3 are identical to those provided in Ex.O. 10096.

[28] 45 CFR 8.1 (a).

[29] 45 CFR 8.2 (1960): *Determination as to domestic rights.* Rights in any invention not subject to disposition by the grantee pursuant to paragraph (b) of § 8.1 are for determination by the head of the constituent organization as follows:

(a) If he finds that there is adequate assurance that the invention will either be effectively dedicated to the public, or that any patent which may be obtained thereunder will be generally available for royalty-free and nonexclusive licensing, the effectuation of these results may be left to the grantee.

(b) If he finds that the invention will thereby be more adequately and quickly developed for widest use and that there are satisfactory safeguards against unreasonable royalties and repressive practices, the invention may be assigned to a competent organization for development and administration for the term of the patent or such lesser period as may be deemed necessary.

(c) If he finds that the interest of another contributing Government agency is paramount to the interest of the Department of Health, Education, and Welfare, or when otherwise legally required or in the public interest, the invention may be left for disposition by that agency in accordance with its own policy.

(d) In all other cases, he shall require that all domestic rights in the invention shall be assigned to the United States unless he determines that the invention is of such douhtful importance or the Government's equity in the invention is so minor that protective measures, except as provided in § 8.3 are not necessary in the public interest.

[30] Specifically, the regulation provides (Sec. 8.1 (b)):

That ownership and disposition of all domestic rights shall be left for determination by the grantee institution in accordance with the grantee's established policies and procedures, with such modifications as may he agreed upon and specified in the grant, provided the head of the constituent unit finds that these are such as to assure that the invention will be made available without unreasonable restrictions or excessive royalties, and provided the Government shall receive a royalty-free license, with a right to

authority to bring to bear every resource, whether public or private, whether by grant or contract, to improve and make generally available the results of such research.

> In 1954, the Commissioner of Education was authorized to enter into contracts or jointly financed cooperative arrangements with universities and colleges and State educational agencies for the conduct of research, surveys, and demonstrations in the field of education.[12]

In 1958, in the wake of great public interest in our schools aroused by Russian launchings of Sputniks I and II, the National Defense Education Act (P.L. 85-864) was enacted to provide financial assistance to encourage the pursuit of learning by establishing various scholarships and loans, to assist in the expansion of graduate education, and also to provide for research for the improvement of methods of foreign language study and related fields and for the development of such materials for public use.[13] Research and experimentation for more effective utilization of television, radio, motion pictures and related media for educational purposes were authorized by grants-in-aid and contracts[14] and various means of disseminating this information were specifically enumerated.[15]

C. *The Office of Vocational Rehabilitation.*

The work of vocational rehabilitation, originally performed in the Office of Education, assumed such formidable proportions during World War II that in 1943 a separate agency, the Office of Vocational Rehabilitation, was established[16] within the Federal Security Agency and was subsequently given broader powers than its predecessor to make grants for research[17] and to disseminate information resulting from its studies[18] in the furtherance of the cause of rehabilitation of physically handicapped individuals and their greater utilization in gainful and suitable employment.

D. *Formulation of Department Policy.*

At least two of the constituent agencies brought to the Federal Security Agency broad experience in research and the administration of resulting inventions. The Food and Drug Administration, previously a part of the Department of Agriculture, had been operating under regulations which required assignment to the United States of domestic rights to employee inventions.[19] The Public Health Service had a traditional policy of complete dedication to the public of inventions resulting from its research.[20] This policy was crystalized in the

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[12] 68 Stat. 533 (1954), 20 USC 331.

[13] 72 Stat. 1594 (1958), 20 USC 512.

[14] 72 Stat. 1595 (1958), 20 USC 541, 542.

[15] 72 Stat. 1595 (1958), 20 USC 551.

[16] Fed. Sec. Agency Order No. 3, Supp. No. 1, dated September 4, 1943.

[17] 68 Stat. 655 (1954), 29 USC 34.

[18] 68 Stat. 658 (1954), 5 USC 37.

[19] Department of Agriculture Regulation 1561 issued 1936.

[20] Judicial approval of this policy was expressed in Houghton v. United States, 23 F. 2d 386, 391 (4th Cir., 1928), cert. denied, 277 U.S. 592, in which the court stated:

> "The Public Health Service represents the people of the United States. Its interest is their interest. Its inventions, investigations, and discoveries are made for their benefit. And

ment research should be made widely, promptly and freely available to other research workers and to the public. This availability can generally be adequately preserved by the dedication of a Government-owned invention to the public through publication. Determinations to file a domestic patent application on inventions in which the Department has an interest will be made only if the circumstances indicate that this is desirable in the public interest, and if it is practicable to do so. Department determinations not to apply for a domestic patent on employee inventions are subject to review and approval by the Chairman of the Government Patents Board. Except where deemed necessary for protecting the patent claim, the fact that a patent application has been or may be filed will not require any departure from normal policy regarding the dissemination of the results of Department research.[2]

One may ask why this limited and begrudging utilization by a Department of Government of the governmental machinery established to safeguard the rights of inventors or their assignees? How did such a policy come to be adopted? How is it related to, if at all, or dictated by the program objectives or legislation of the Department? These and other questions find their answers partly in the history of the Department and its predecessor, the Federal Security Agency, and partly in the missions of the component operating agencies of the Department and the responsibilities imposed upon them by statute.

I. The History of the Department.

The Federal Security Agency, the predecessor of the Department, was established in 1939[3] in order, for the first time,

to group . . . those agencies of the Government the major purposes of which are to promote social and economic security, educational opportunity and the health of the citizens of the Nation.[4]

The Department of Health, Education, and Welfare was created by Reorganization Plan No. 1 of 1953,[5]

to improve the administration of the vital health, education and social security functions now being carried on in the Federal Security Agency by giving them departmental rank. Such action is demanded by the importance and magnitude of these functions which affect the well-being of millions of our citizens.[6]

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[2] Section 6.2, Department of HEW Reg., "Inventions and Patents (General)" 45 CFR 6.2 (1960).

[3] Reorganization Plan No. 1, Sec. 201, 53 Stat. 1424 (1939), 5 USC 133t.

[4] President Roosevelt's message in sending Reorganization Plan No. 1 (1939), *supra*, to Congress. President Truman described the purpose of the Agency in his message sending Reorganization Plan No. 2 of 1946 (60 Stat. 1095 (1946), 5 USC 133y to 133y-16, n.) to Congress as follows:

"Broadly stated, the basic purpose of the Federal Security Agency is the conservation aud development of the human resources of tbe Nation. Within that broad objective come the following principal functions: Child care and development, education, health, social insurance, welfare (in the sense of the care of the needy and defective), and recreation (apart from the operation of parks in the public domain)."

[5] 67 Stat. 631 (1953), 5 USC 133z-15 n.

[6] Message of President Eisenhower transmitting the Plan to Congress, March 12, 1953, 5 USC 133z-15 n.

criteria legislatively established. Such suggestion has been made by many, including the Comptroller General.[30]

However, it is because of the need for flexibility that we believe the function of defining the *public interest* should be placed in an administrative agency. This is not to say that Congress should not be made a partner to defining *public interest.* The Congressional view can and should be made known through a statutory statement of Congressional intent and in connection with the reports and investigations conducted by Congressional Committees.

V. Conclusion

We believe that the recent renewed interest and public debate on the difficult problem of establishing a patent policy has been most salutary. It has focnsed attention on the need to recognize the problem for what it is—the lack of a national policy reflecting the *totality of the public interest.*

At present there is considerable doubt as to whether the Government's heterogeneous policies can be said to have dne regard for the rights of both the public and the individual contractors. The rights of each must be fully respected to the end that there be equity and justice for both. There also must be an adequate recognition that in some instances the contractor may require greater compensation if the Government takes title to patents developed with public funds. The Government should be willing to accept this obligation as part of the cost of protecting and advancing the *public interest.* By the same token, industry mnst be prepared to yield its personal advantage to the total *public interest.* This is the essence of democracy. With a spirit of willingness, the problem which has diverted so much time and energy from more fruitfnl tasks can be solved.

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[30] Letter to House Committee on the Judiciary, dated Mar. 10, 1960, commenting on H.R. 5448, 86th Cong., 1st Sess.

provision is made for administering the Government's patent portfolio.[27] A single Agency administering the Government's patent acquisition policy would be readily available to perform this function. The Agency could determine when and to what extent users of Government owned patents should be granted exclusive rights. It could police the proper utilization of these rights. It also could determine when and to what extent royalties should be collected for the use of specific inventions. Furthermore, where the *public interest* so required and Congress so authorized, the Agency would be available to assist private industry in the commercial development and exploitation of Government-owned inventions which industry has neglected. A start in such Government assistance has been made by Great Britain. That Government hopes that "early progress will be achieved, as a solution to this problem could help to bring about a substantial improvement in the field of the practical development of the results of civil scientific research." [28]

The Agency would be available to administer programs for rewarding inventors, which many urge is essential in order to stimulate inventiveness and to soften the adverse impact on contractors and their employees of the *Title Policy*.

To those who fear that a single administering agency would mean a single policy to be applied to all Government agencies with attendant rigidity and inflexibility, we would say that the same definition of the *public interest* should be applied in the same way to the same facts regardless of the contracting agency. The place for flexibility is in the definition itself where the purposes and objectives of the different contracting agencies should be recognized.

C. Some Elements of the Public Interest

If, as we have suggested, the rather amorphous considerations of the *total public interest* are to control the final disposition of Federally-financed inventions, then recognition must be given to the fact that the development of the definition is a matter of special proficiency. By the same token, it must

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[27] In the past, the Government's ownership of a patent in effect has been tantamount to a dedication of the invention or discovery to the public. The Government generally does not grant royalty bearing licenses. Nor does it sue for infringement. To some this policy or lack of policy (1) loses valuable income which they feel rightly belongs to the people and (2) nullifies the patent concept because the exclusivity afforded by the patent laws is not enforced. Whether there is a need for exclusiveness in order to stimulate exploitation of Government owned patents is debatable. It has been observed, and with justification, that the lack of exclusiveness has not deterred many from marketing products which depend on the use of Government owned patents. Similarly, large segments of the industrial sector of our nation operate in areas where there are no patents and patent pooling agreements and antitrust decrees which have the effect of destroying the right to exclude, have not deterred firms, both large and small, from exploiting the products involved. Another objection to this exclusivity is the alleged economic waste resulting from the need of non-licensees to "invent around" a patent or the efforts of the patent owner to "fence in" the invention for the purpose of either compelling others to seek a license or to destroy competition.

In rebuttal, advocates of this exclusivity argue that it is an equalizer enabling small firms to compete with their large competitors, and without the right to exclude, the economic strength, distribution systems and consumer acceptance of the large concerns would cause a small firm to think twice before undertaking to develop a market for a new idea. Insofar as "inventing around" and "fencing in" are concerned, this they argue is a benefit rather than a waste as it encourages competitive thinking and stimulates inventors to new advances. This problem, in many ways, involves the issue of the need for a patent system. Therefore, as we observed earlier, it should be reserved for another forum. However, we would be remiss in not observing that, like so many other debated points, examples can be cited in favor of both sides.

[28] Annual Report of the (British) Advisory Council on Scientific Policy 1959-1960, 11.

to make its case must convince even the proponents that their "industry take all —Government take none" demands cannot prevail.

On the other hand, the Long Subcommittee hearings evidenced a need to protect small business against the consequences of an unlimited *License Policy,* but the testimony also indicated that an unrestricted *Title Policy* might not be the entire solution.[22]

The answer then must be in a policy which retains title in the Government when this is in the *public interest* and relinquishes title to the contractor when this action is indicated to be in the *public interest.* This middle-of-the-road approach is beginning to find more favor in the Congress and in other informed quarters. In effect, this is the policy we understand the majority of the Mitchell Subcommittee to have intended NASA to follow.[23]

A. *Need for a Government-wide Definition*

The recent Congressional hearings, when viewed in perspective, also demonstrate that which most impartial observers had begun to suspect—the Government's patent policy must be predicated on the totality of the *public interest*—and not merely the needs, interest or even the concept of *public interest* of a contracting agency. Any definition of *public interest* then must be applied Government-wide.

Permitting individual agencies to adopt their own concept of *public interest* is tantamount to inviting contractors to play one agency against another with the consequent weakening of the policy structure. The experiences of NASA should dispel any doubts as to the soundness of this conclusion.

Mr. John A. Johnson, NASA General Counsel, informed the Mitchell Subcommittee at the very beginning of the hearings:

> ". . . it is undesirable for an agency such as NASA to be compelled by legislatiou to follow a patent policy that is fundamentally divergent from that of the Department of Defense.
>
> Now I say this without entering upon the question of whether it is good Government policy to take title to inventions . . .
>
> I say that for this reason: All of our principal contracts are with the very same companies . . . that are the principal contractors for the Department of Defense."[24]

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[22] *Supra,* note 1, Hearings. Cf. for example the testimony of Roland A. Anderson at 243. See also the testimony of Senator Long before the Subcommittee on Patents, Trademarks and Copyrights, Senate Committee on the Judiciary on S. 3156 and S. 3550, 86th Cong., 2nd Sess. on May 17 and 18, 1960, at 92.

[23] *Supra,* note 18. The disagreement by the minority of the full Committee is not witb this "middle of the road" concept but with what it characterized as the Subcommittee's "narrow approach as a limited view of what is fundamentally a very broad-gaged national problem." The minority felt that only by coming to grips with the basic problem could "Congress hope to come up with an intelligent answer to the question of what should be the patent policy of, not just the space agency, but the U. S. Government." *Supra,* note 5, Cong. Rec. 11295.

[24] *Supra,* note 5, Hearings at 3. The Mitchell Subcommittee report took cognizance of this, stating that "Under the present law . . . the National Aeronautics and Space Administration is required to function under a statute and through regulations which make it difficult at times to achieve the research and development demanded by its program . . .

There are two prime reasons for this in the eyes of . . . [NASA] officials who work with the patent clause. One is that the Space Administration must operate on principles which are at odds with those of the Department of Defense . . ." *Supra,* note 18 at 28.

gives rise to the misgivings of the Department of Justice also must cause concern within the Small Business Administration and for much the same reasons.

We do not choose to urge that patents in themselves are the bane or saviour of the smaller enterprises. This issue, we have suggested earlier, should be decided under other auspices. But we could not embrace without the highest degree of reluctance and in the face of other overwhelming considerations a patent policy which would aggravate the already dangerous potential of the steadily dwindling small business share of the Government procurement and research and development dollar. This, we submit, would not be in the *public interest* under any definition of this elusive concept.

IV. Defining and Implementing the Public Interest

We are not so foolhardy as to recommend a detailed Federal policy for the acquisition and disposition of patents. In our view, many of the facts (as distinguished from conjectures) upon which such a policy must be based have still to be brought to light.[15] Nevertheless we suggest that certain facets of the problem are clear.

First, the dimensions of the problem must be acknowledged. It is not a matter which is the sole concern of the contractor and the contracting agency and the equities which lie between them. Also to be recognized is the necessity for providing a means of adjusting the application of the patent policies whatever they may be, to individual situations.

If anything is clear in this controversy it is clear that neither an all nor a none policy will be satisfactory. We believe that the hearings conducted by the Long Subcommittee [16] and by the Mitchell Subcommittee [17] demonstrated this. The Mitchell Subcommittee investigated the Government Patent Policy issue "largely" [18] because industry and the Patent Law profession were increasingly critical of the *Title Policy* established by the National Aeronautics and Space

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[15] The Attorney General's report of November 9, 1956, observed the lack of adequate data and concluded that a further study was warranted. *Supra,* note 8 at 48. Subsequent thereto, Study Group 14 of the Interagency Task Force for Review of Government Procurement Policies and Procedures, composed of representatives of the major executive departments and agencies under the chairmanship of the Commissioner of Patents undertook to make a comprehensive review of the problem. However, it could not complete its assignment because of the lack of data. As its recommendation, a contract was made with the Patent, Trademark, and Copyright Foundation of the George Washington University for a pilot study to develop these facts. As of February 1, 1961, the Foundation had not made its report although the report was expected momentarily. *(Editor's Note:* See article *infra,* entitled *Research in Patent Policies in Federal R&D Contracts,* by Prof. Donald Stevenson Watson, G. W. Univ. Patent, Trademark, and Copyright Foundation.)

[16] *Supra,* note 1.

[17] *Supra,* note 5.

[18] Majority report of the Mitchell Subcommittee *Proposed Revisions to the Patent Section, National Aeronautics and Space Act of 1958,* 86th Cong., 2nd Sess. 6. 12-14. Representative James S. Quigley, a member of the Subcommittee, signed the minority report filed by the full Committee. *Supra,* note 5.

fits from performance of Government research, citing such matters as profits, ready access to subsequent procurement contracts, commercial application of Government-financed research and the competitive advantages of the acquisition by Government contractors of trained scientific personnel, technical information and patents.

The Attorney General's report concluded that the total effect of the research and development effort may well tend to increase concentration of economic power but pointed out that there was no adequate compilation of statistical material upon which to base a satisfactory evaluation of the problem of economic concentration in this area. Insofar as Government patent acquisition policy is concerned, the report suggested that the policy of permitting a company performing contract research to retain full ownership of any patents issued, granting to the Government only a limited non-exclusive right to use the invention, "may well be one of the major factors tending to concentrate economic power." [9]

The report acknowledged that the decision as to which patent policy should be recommended, that is, whether the Government should acquire full ownership of patents or be content with a limited non-exclusive right to use, is not an easy one particularly in the absence of adequate statistical information upon which to base such a judgment. "Each of the contending positions," the report stated, "can marshal a respectable body of argument."[10] The report concluded:

> "Most importantly, however, these opposing contentions must be reexamined in the light of further information on the economic effects of present awards. If such further analysis demonstrates a strong tendency toward concentration, then it would seem that the vital interest of this Government in maintaining a freely competitive economy would add a strong argument in favor of Government acquisition of patents. Of course, any such patents held by the Government should continue, within necessary security limitations, to be available under non-exclusive licenses to all applicants, including the contractor who performed the research and development work." [11]

We will not hazard a guess as to the current view of the Department of Justice on this problem.[12] Obviously, their concern with practices which tend to concentrate economic power is a continuing one. It seems safe to anticipate that the Department would oppose any Government patent policy which would tend to bring about this result. Insofar as the Department of Justice is concerned, it would appear clear that the *public interest* would require the adoption of Federal policies which would avoid encouraging undesirable concentration of power. Some have suggested that the antitrust laws provide adequate assurance

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[9] *Id* at 48.

[10] *Id* at 49.

[11] *Id* at 53.

[12] In a letter dated December 7, 1959, to the Long Subcommittee, Acting Assistant Attorney General, Antitrust Division Robert A. Bicks reviewed the past reports of the Attorney General and reiterated the Department's concern. However, he urged that legislative action should await completion of a study undertaken by the Patent, Trademark, and Copyright Foundation of the George Washington University for Study Group 14 of the Interagency Task Force for Review of Government Procurement Policies and Procedures. *Supra,* note 1, Hearings at 422-425.

II. The Eternal Verities

Before coming to grips with the question of what should be done to establish a national policy governing the acquisition and disposition of patents developed through the expenditure of public funds, we would like to suggest several propositions which we believe reasonably can be characterized as truisms. As such they will, perhaps, merit the support of most if not all the proponents of the various theories put forward as a desirable national patent acquisition policy.

The first of these is that the issue of whether the present patent system is a beneficial one should be reserved for another forum.[4] The question before us today assumes the issuance of a patent and concerns itself solely with the disposition of this patent within the framework of our patent system. Obviously, if the patent system is to be eliminated this issue likewise will be eliminated.

Next we would like to suggest that the patent policies espoused by certain interests, and the arguments urged to support these different policies have been colored by the immediate personal advantage of the proponents. Thus, Government contractors who are likely to develop patentable inventions, patent lawyers and Patent Bar Associations in their own proper self-interest urge that the contractor is entitled to the fruits of such inventions.[5] Other Government contractors, perhaps unfairly designated imitators, find their self-interest in ready access to the patents developed by others.

The Federal contracting agency, in the main, has no immediate concern with the ultimate disposition of patent rights provided it is not precluded from utilizing these patents for its own purpose. In point of fact, the contracting agency may be reluctant to commit its always limited funds for the acquisition of patents rights beyond those immediately necessary to the agency's mission.

Much has been said of the differences in the patent policies of the Defense establishment and those of the National Aeronautics and Space Administration. In a fundamental sense, however, they do not differ. It is possible under each

[4] For a comprehensive review of the conflict over the patent system, see the study entitled *An Economic Review of the Patent System*, prepared by Professor Fritz Machlup of Johns Hopkins University for the Subcommittee on Patents, Trademarks and Copyrights of the Senate Committee on the Judiciary, Study No. 15, 85th Cong., 2nd Sess. Some advocates of the *License Policy* have charged that the *Title* proponents are seeking to destroy the patent system. We find no indication that any Government officials who advocate the *Title Policy* are so motivated.

[5] During the 86th Cong., 1st Sess., the Subcommittee on Patents and Scientific Inventions of the House Committee on Science and Astronautics (hereinafter called the "Mitchell Subcommittee") conducted hearings on P.L. 85-568, No. 47: *Property Rights in Inventions Made Under Federal Space Research Contracts*, on Aug. 19, 20, Nov. 30, Dec. 1, 2, 3, 4, and 5, 1959. The minority report filed by members of the full Committee noted the "self interest" of the proponents of the *License Policy* in the following language:

> "Less than 2 years ago the Congress of the United States enacted this country's first space law.
>
> "Literally before the ink was dry on the National Aeronautics and Space Act of 1958 an organized campaign was begun against the patent provisions contained in section 305 of that law. The shock troops in this assult were recruited either from industry or the organized bar . . .
>
> "The opposition of both industry and the patent lawyers to the Government taking title to patents as provided for in both the Space and Atomic Energy Acts is indeed understandable. The patent lawyer's interest in the preservation of the patent system is self evident. As the patent system goes so goes the patent lawyer . . . Neither industry nor anyone else is to be criticized for not wanting to give up a good thing." Cong. Rec. 11294-5 (Daily Ed. June 8,1960).

once said by Oscar Wilde—"Consistency is the last refuge of the unimaginative." It would appear preferable to have substantial uniformity, with correction by administrative action, rather than a rigid, inflexible, uniform fixed policy for all agencies and departments regardless of the purposes and objectives of the particular agency or department program, or without regard to the equities of the contractor.

With these general objectives in mind, a policy of providing for Federal Government acquisition of title and rights in inventions under Government research and development contracts, might be appropriate:

(1) Where the Congress has specifically provided for such acquisition as being in the national interest and for the general welfare under specific statutory authority.

(2) Where the research or development pertains to public health, public safety, and the general welfare.

(3) Where the research is basic-fundamental research as contrasted with applied research.

(4) Where the particular research program calls for joint work by a group of contractors looking towards the solution of either a specific objective or several different objectives for one general purpose, e.g., a group of contractors working on the development of a specific article, or a group of contractors working on different parts or components of one end product.

(5) Where the Government is the prime developer of the subject matter of the research and development.

(6) Where the field of research and development is entirely new and there is no immediate apparent outlook for non-government development in the future, or

(7) Where the invention arose out of a Government or agency-owned or operated facility administered by a contractor.

However, where the research and development sponsored by the Government relates to a field of work in which the contractor has an established industrial and patent position and only incidentally pertains to some phase of Government research or development work, the acquisition by the contractor of the principal or exclusive rights in such fields of the contractor's business, subject to a Government license, may be deemed appropriate.

In the event that the Government did not file for patents on any invention where the policy permits of the Government's acquisition of the rights, the Government may waive its rights, subject to a governmental right to use. In such event, as well as in situations where the exclusive rights are appropriately vested in the contractor, the contractor's rights should be subject to a requirement that the contractor license others at reasonable royalties if, after three years following issuance of the patent, the contractor cannot satisfy the public demand for the patented subject matter. In the absence of an agreement between the contractor and the prospective licensee, the terms and conditions of a license, as well as the amount of any royalties, should be fixed in an appropriate administrative proceeding which is subject to judicial review.

The industrial practice generally is for the employer to acquire all the rights in inventions of its employees that are made in the course of, or that pertain to the scope, of their employment. When the Government pays for the research and development, it has been asserted that the Government stands in the shoes of the employer as respects the employee and should acquire the same rights from the employee. Industrial organizations assert that this is not a valid comparison since a company affords the security of continued employment, promotions, and other benefits, whereas a Government contract relationship involves a single piece of work.[44] However, as the Court of Claims observed, the contractor often has the same relationship to the Government as an employee to his employer.[45] In many situations, the Government research contracts are negotiated for terms of three or more years, and even yearly research and development contracts are extended year after year. In some instances, Government contracts provide more secure employment in research organizations than may be provided by private companies. Today it is not unusual in a Government-owned-contractor-operated facility to have the employees remain in the facility and pursue the same research even though the contract may be transferred from one contractor to another. Thus, in these type of situations, while the contractor furnishes administration of the facility, it does not furnish either know-how or physical facilities for the conduct of the research and development program.

It is argued that in a cost-plus-a-fixed fee contract, the Government only permits a certain percentage of overhead for the administrative costs of management, which percentage does not cover the cost of the contractor since the item limitations do not provide for reimbursement of the contractor for his entire contributions. Even assuming that the Government does not cover all items in overhead, it may be that if it were not for the Government contract, the contractor might not be able to maintain a research staff on the level of its present organization, or keep abreast of new developments and maintain a forefront position in a particular field. Further, much of the research and development efforts under Government contracts may be applicable to individual products of the contractor and thus lead to improvements in the commercial products of the contractor.

D. Patents As a Source of Knowledge

There can be no question but that patents are a source of knowledge. They are, as to the patent claims, meaningful exclusive knowledge for 17 years for purposes of manufacture, use, or sale. The technical contract reports under research and development contracts are also a source of knowledge. In today's rapidly advancing technological fields, a serious question is raised as to whether the usual four to six year delay in the issuance of a patent does not detract from the use of the patent knowledge in the advancement of knowledge. When a contractor acquires the exclusive invention rights, subject to a Government license, the contractor does not desire to disseminate the technical data that embodies the invention, at least, until the contractor files the United States patent application. In many instances he desires to withhold the information until the patent issues in order to keep the knowledge from his competitors—a reasonable motive when technical knowledge is generated with private funds—but certainly subject

[44] *Supra* note 33 at p. 5

[45] Ordnance Engineering Co. v. United States, 68 Ct. Cl. 301 (1929), *cert. denied,* 302 U. S. 708 (1937).

there are no general published statistics. However, certain private research organizations have had a policy of granting nonexclusive licenses, and there has been commercial exploitation even though only nonexclusive licenses have been granted. Vitamin B was extensively marketed under nonexclusive licenses granted by Research Corporation.[38] In addition, the group cross licensing arrangement of the Automobile Manufacturers Association caused at least one writer to conclude that

> The automobile industry is not a unique exception which proves the rule, but rather an unanswerable deliverance of experience which contradicts the thesis that without monopolistic patent structures industrial advancement cannot occur.[39]

These illustrations indicate that if a product has a potential market and other economic factors are favorable, commercial exploitation will be effected on the basis of the anticipated profit rather than on whether a product manufacturer has an exclusive or nonexclusive license.

C. The Government Should Get What It Pays For.

The advocates of a Government licensing policy assert that all the Government pays for is a product and a license to use for governmental purposes. The title theorist is just as forceful in stating that the Government has paid not only for the product of the research and development, but also for all the rights in the inventions and for the technical know-how which are the result of Government-financed research and development work. It may be that both sides overstate their respective cases, and what the Government pays for will differ under various circumstances depending upon the program and objectives for which research and development is conducted.

If the program is to develop a device or product which has only Government use and no present or foreseeable commercial use, the Government may well be said to be paying for the entire research and development. Where the contract is a cost-plus-a-fixed-fee for the operation of a Government laboratory or facility, the Government may be paying the entire bill and possibly should be in position to acquire the entire fruits of its activity. On the other hand, if the Government's purpose is only to secure a specific adaptation of a commercial device, the Government may not be paying for more than limited rights, and the equities of the situation may warrant the acquisition of such limited rights. In this connection the National Association of Manufacturers has stated:

> The distinction between purely governmental reasons for financing research work and the development of commercially valuable inventions should be kept firmly in mind. Thus, after receiving delivery of an article or process and attendant rights for governmental purposes, there has been a fulfillment to the Government for its expenditure. Certainly, the Government did not contract with a commercial purpose—nor should it have such intent.[40]

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[38] *Supra* note 23.

[39] C. A. Welsh, Duke Law Review, Spring 1948, page 276 and 277.

[40] *Supra* note 33, at p. 5.

ployment, a common industrial practice, it can seriously be questioned whether there is any less incentive to the individual inventor if the Government, instead of the contractor, acquires the rights. The inventor in both situations usually is salaried and has the same relative opportunity for financial as well as professional advancement. As Mr. Ray Harris recently expressed it:

> There is not the same incentive to invent in the case of the hired inventor as in the case of the private inventor. The incentive is either, therefore, lost or greatly reduced in the case of the hired inventor. His incentive is his pay—not the patent.[31]

Under certain circumstances, there may be a greater inducement, if not incentive, to the hired inventor, when the Government acquires the rights, than when the rights are acquired by the employer contractor. When the Government acquires the rights, the Government generally accords royalty-free licenses upon request.[32] Thus the hired inventor, if he leaves one company, is himself privileged, as is his subsequent employer, to nse the inventions that were made in the course of his previous Government-financed employment. Neither he nor his second employer is restricted from using his original contributions, for both can secure royalty-free licenses. In other words, the Government's acquisition of the invention possibly could lead to a wider opportunity for employment of the employee-inventor.

It is often asserted that exclusivity in a contract will stimulate others to invent around the invention and thereby promote faster progress. Without disagreeing with this premise, it can be asserted with equal force that, with only a nonexclusive license, a contractor, a manufacturer, or anyone else has a strong incentive to improve the product so as to secure a patent on an improvement and thus to protect his privately improved product. Improvement is always potentially possible. The stimulant appears greater to build and improve upon what everyone may use, and to protect one's own privately developed individual position, rather than merely to develop around the invention. It may be more equitable to the public for the Government to acquire exclusive rights in a new field and permit the contractor and others to use and to improve upon what was produced under government-sponsored research and development.

B. Protection of Risk Capital in Exploitation.

The assertion has been made that contractor ownership of inventions is necessary in order that the inventions can be commercially exploited.[33]

It is recognized that there are inventions which may require considerable capital to promote, and the protection of this risk capital may be necessary in such instances to secure commercial production of the product. However,

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[31] American Patent Law Association Bulletin, May 1960, p. 217.

[32] As to U. S. patents, this is the policy of the Atomic Energy Commission (10 CFR 81), Department of Agriculture (Agriculture Patent Manual, Chapter VII, Sec. 3), Health, Education and Welfare. See supra, note 5. Tennessee Valley Authority Preliminary Report to the Subcommittee on Patents—Patent Practices of the Tennessee Valley Authority, 85th Cong., 2nd Sess. (1959), p. 210. It is to be noted that the Federal Aviation Agency recently adopted a policy of sharing in royalties where the contractor acquires the rights. *Supra* note 6.

[33] National Association of Manufacturers, *Patent Rights under Government Contracts*, No. 8, p. 8, November 1960.

it is inevitable that there will be a further increase of patents held by corporations or the Government, as most Government research and development work is performed by corporations.[21] Since much of the Government research dollar has been spent with research departments of relatively large corporations,[22] it is to be expected that these relatively large corporations will acquire the bulk of the inventions resulting from Government sponsored research and development work.

After an exhaustive study of Government patent practices, the Attorney General in May 1947 recommended to the President that developments in technology financed by Federal funds should be owned or controlled by the Government.[23] He stated, in part:

> Where patentable inventions are made in the course of performing a Government-financed contract for research and development, the public interest requires that all rights to such inventions be assigned to the Government and not left to the private ownership of the contractor. Public control will assure free and equal availability of the inventions to American industry and science; will eliminate any competitive advantage to the contractor chosen to perform the research work, will avoid undue concentration of power in the hands of a few large corporations; will tend to increase and diversify available research facilities within the United States to the advantage of the Government and the national economy; and will thus strengthen our American system of free, competitive enterprise.[24]

The Attorney General, in a December 1956 Report,[25] again recognized the problem, stating

> If consideration of such future inventions should confirm the tentative conclusions of this report regarding patents, the present Government patent policy should be carefully re-examined and amended to provide stronger safeguards for the maintenance of a freely competitive industrial economy.

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[21] National Science Foundation Bulletin 59-65, No. 16, December 1959.

[22] Attorney General's Report, Nov. 9, 1956, p. 53—The summary shows that for the five fiscal years 1940-44, although nearly 2,000 industrial organizations received research contracts, the 10 largest corporations received 37% of the funds, the 20 largest 50%, the 40 largest 60% and the 60 largest 65%. Id p. 16. See also Economic Concentration and World War II, 79th Cong., 2nd Sess., Senate Docket 206, p. 52. The Defense Department statistics for research and development contracts in 1954-56 show that a relatively few number of corporations have the bulk of Defense contracts. An analysis in the Final Report of the Select Committee on Small Business, House of Representatives, 84th Cong., 2nd Sess. states for 1954-1956 that

> "the 100 top recipients accounted for 85% of the value of all research and development contracts awarded in that period; the 200 top recipients accounted for 91% of the total; and the 300 top recipients accounted for 94% of the total. Thus it is apparent that these research and development funds awarded in the three years were highly concentrated in the top 100 contractors; and that substantially all of these funds (94%) went to only 300 contractors."

H. Rept. No. 2970, 84th Cong., 2nd Sess. Jan. 3, 1957, reprinted, p. 390, Hearings before the Subcommittee of the Select Committee on Small Business, U. S. Senate, 86th Cong., 1st Sess., December 8-9, 1959.

[23] U. S. Department of Justice Investigation of Government Patent Practices and Policies, Final Report of Attorney General, May 1947, Vol. 1, p. 37.

[24] *Ibid.*

[25] Report of Attorney General, December 7, 1956, pursuant to Section 708e of the Defense Production Act of 1950, as amended, pp. 48-55.

general field of Government research is Section 305a of the National Aeronautics and Space Act of 1958,[10] which provides in part that:

> Whenever any invention is made in the performance of any work under any contract of the (National Aeronautics and Space) Administration, and the Administrator (of the National Aeronautics and Space Administration) determines that . . . (a contract relationship exists) such invention shall be the exclusive property of the United States. . . .

The Tennessee Valley Authority Act[11] and the Department of Agriculture Research and Marketing Act of 1946[12] also provide that the Government take title to inventions in designated circumstances. A somewhat neutral policy is established by the National Science Foundation Act of 1950[13] which requires that contracts relating to scientific research made by the National Science Foundation

> shall contain provisions governing the disposition of inventions produced thereunder in a manner calculated to protect the public interest and the equities of an individual or organization with which the contract or other arrangement is executed.

The National Science Foundation implemented this legislative direction by adopting an administrative policy of only acquiring a nonexclusive license for governmental purposes.

II. The Government's Ever-increasing Role in Research

Before World War II, the Federal Government-sponsored research and development was only a small percentage of research and development conducted in the United States. Since then, however, the Federal Government has played an ever-increasing role in financing such work. At present, its percentage of the total research and development dollar spent in the United States exceeds the combined expenditures of all other sources.

Between 1953-1954 and 1957-1958, there was a 124% increase in expenditures by the Government for research and development. The National Science Foundation, in its Bulletin for December 1959,[14] observed that:

> The most significant change in the distribution of total funds . . . from 1953-1954 to 1956-1957, was the growing predominance of the Federal Government, which provided 59% of all funds of 1956-1957 as compared to 53% for 1953-1954.

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[10] 72 Stat. 426 (1958), 42 USC 2451.

[11] 48 Stat. 61 (1933), 16 USC 831d (i), which provides that "any invention or discovery made by virtue of and incidental to such services by an employee . . . [of the Tennessee Valley Authority] shall be the sole and exclusive property" of the Authority.

[12] Sec. 10 (a) (60 Stat. 1085 (1946), 7 USC 427I (a)) provides that ". . . any contract made pursuant to this authority shall contain requirements making the results of research and investigations available to the public through litigation, assignment to the Government or such other means that the Secretary shall determine," and Sec. 205 (60 Stat. 1090 (1946), 7 USC 1624 (a)) provides that ". . . any contract made pursuant to this section shall contain requirements making the results of such research and investigation available to the public by such means as the Secretary of Agriculture shall determine."

[13] 64 Stat. 154 (1950), 42 USC 1871a.

[14] National Science Foundation Bulletin 59-65, No. 16, p. 3, December 1959.

IF THERE IS AN INVENTION UNDER A GOVERNMENT CONTRACT—WHO SHOULD GET IT?

Roland A. Anderson *

I. The Basic Patent Statutes

The basic United States patent statutes have remained substantially the same since 1870 except for the non-controversial modifications codified in the 1952 Patent Act.[1] However, since the end of World War II a conflict has arisen as to the division between the inventor, his employer and the Federal Government of the patent rights to inventions arising out of Government-financed research and development work.

In the absence of an agreement to the contrary, the rule accepted in industry generally is that the sponsor of a research or development project is entitled to the patentable inventions resulting from the work. Insofar as Government-financed research and development work is concerned, however, there is no uniformity among the departments and agencies as to what policy the Government should follow with respect to the ownership of the rights to patentable inventions. Many of the departments and agencies involved in contracting for research and development, including the Department of Defense, National Science Foundation, the Post Office Department, General Services Administration, the Treasury Department, etc., have maintained the administrative policy of generally retaining to the Government only a royalty-free, non-exclusive license and permitting the contractor to acquire patents on any inventions resulting from the performance of the contract work.[2] Several of the Federal Departments, including Health, Education and Welfare, the Department of Agriculture, the Veterans Administration, and the Federal Aviation Administration have obtained more than a nonexclusive license under certain circumstances.[3] The Department of

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[1] 66 Stat. 792 (1952), 35 USC Secs. 1-293. See G. A. Koris, Atomic Industrial Forum Paper, presented December 15, 1960. Although the basic patents laws have not substantially changed, the exclusive rigbt accorded by the patent laws "to make, use or sell" or to refrain from so doing has been circumscribed by other statutes and by judicial interpretations. For example, the right to injunctive relief as against the Government is denied to the patent owner when the product is being made by or for the Government. 66 Stat. 757, 28 USC 1498. More recently other innovations have been enacted, such as the exclusion of atomic weapons inventions from patenting and the compulsory licensing of other atomic energy patents. (Sec. 153 of the Atomic Energy Act of 1954, 68 Stat. 919 (1954), 42 USC 2183) Id, Sec. 151a, 68 Stat. 919 (1954), 42 USC 2181a.

[2] Sec. 9-107, Armed Services Procurement Regulations (ASPR), 32 CFR 9.107 prior to Jan. 31, 1961; *Patent Practices of the National Science Foundation,* Preliminary Report of the Sub-committee on Patents, 85th Cong., 2nd Sess. (1959), p. 83; *Patent Practices of the Post Office Department,* Preliminary Report of the Sub-committee on Patents, 86th Cong., 1st Sess. (1959), p. 4; *Patent Practices of the General Services Administration,* Preliminary Report of the Sub-committee, 86th Cong., 1st Sess. (1959), pp. 3-4; *Patent Practices of the Department of the Treasury,* Preliminary Report of the Sub-committee on Patents, 86th Cong., 2nd Sess. (1960), pp. 3-4.

[3] Department of Health, Education and Welfare, Monograph, Preliminary Report of the Sub-committee on Patents, 86tb Cong., 1st Sess. (1960), pp. 5-11; Department of Agriculture, 60 Stat. 1090 (1946), 7 USC 427 and 1624; *Patent Practices of the Veterans Administration,* Preliminary Report of the Sub-committee on Patents, 86th Cong., 1st Sess. (1959), pp. 3-4. The Federal Aviation Agency recently announced a policy of acquiring title to inventions

But if the license approach is applied automatically, it may pass over situations in which title in the Government would be the appropriate solution in keeping with some definite overriding considerations. The Armed Services Procurement Regulation is currently being amended to provide explicit recognition of the need to consider the desirability of taking title in certain definable areas and to provide examples of considerations which would lead to the Government's insisting on title.[48]

Some other interesting proposals have been made to expand the license right in the Government short of complete title. One of these is to require that either the contractor agree to grant licenses on Government sponsored inventions to anyone who asks at reasonable royalties or to give the Government the power to do so. This scheme may well be open to some of the same objections as a strict title policy. It is generally felt that the desirability of a patent to an industrial organization stems primarily from the protection it affords to one's own production and only secondarily from the possibility of royalty income. The exclusionary value of the patent would of course be eliminated. In addition there would be the difficulties of determining reasonable royalties and who would be the ultimate judge of reasonableness. The Government would almost inevitably become involved in litigation.

A variation is to provide that the Government share in the commercial profits of the invention in order to recover Government expenses. This is modeled in part on the British practice of requiring a return for the commercial use of "designs", *i.e.,* technical data, developed for the British Government. This practice has had several successful applications, notably in overseas sales of aircraft, and may possibly be appropriate in certain instances in this country.[49] It should be noted that the British Ministry of Supply acquires only a royalty-free license, not title, to patents on contractor inventions.[50] With respect to sharing profits on patents, as opposed to "designs", insoluble problems of valuation would undoubtedly arise, as when a patented invention in which the Government has an interest is used commercially in combination with other patented inventions in which the Government has no interest. Aside from the question whether the Government's share would be passed on to the consumer as a hidden tax, further work remains to be done to show whether the returns on a broad program of this character would be worth the costs.

Another suggestion is to continue to acquire licenses from all contractors but from those contractors who are not "small businesses", as certified by the Small Business Administration, to obtain an additional power to grant sublicenses (at reasonable royalties or royalty-free) to certified small business concerns. This would preserve the incentives of the patent system between the "big" firms but would allow small businesses the benefits of the inventions made by the larger companies under Government contracts, while preserving the small business position as against larger competitors. This proposal would seem to be discrimina-

[48] ASPR 9-107 (1961).

[49] See notes 21 and 23, supra.

[50] R.A.P. Guest (Patents Adviser, British Joint Services Mission), *Policies of the United Kingdom Government Respecting the Division of Rights Between Government Departments and Their Contractors in the Area of Research and Development,* speech to the Briefing Conference on Patents, Copyrights and Trademarks, sponsored by the Federal Bar Association and The Bureau of National Affairs, Inc., Washington, D. C., May 18, 19, 1959. If an invention is jointly made by a contractor employee and a British Government employee, the Government usually assigns its rights to the contractor on a royalty basis.

policy had to be modified to permit the contractor to have the first opportunity for filing patent application overseas.[39] It is apparent therefore that a uniform policy of requiring patent titles to flow to the Government would have a serious effect on the operations of agencies which depend upon American industry for a good portion of their research activity.[40]

There is a fear frequently expressed that permitting contractors to retain for commercial applications ownership of patents on their inventions made under Government contracts will tend to concentrate economic power in a relatively few businesses to the detriment of a competitive economy. This is a very difficult subject about which to frame a policy, partly because, as most students of the problem have acknowledged,[41] there is so little factual material available to prove or disprove the thesis, and partly because this uncertainty makes it most difficult to assess the relative weight of anti-trust considerations and the needs of the agency when the aims may be said to conflict. A number of studies are underway, but progress seems to be slow. [42] The Department of Justice, which has been the strongest advocate within the Government for a uniform policy of acquiring title to contractor inventions, has recently taken the position that in view of the complex relevant factors and the conflicting considerations involved no legislative action on Government-wide patent policies should be taken until the results of these studies have become known.[43]

A few general observations seem to be pertinent. From a policy point of view this problem could be handled only on a broad basis. It would present the most serious administrative difficulties if, for example, an administrator had to consider the possible monopoly effects of any particular research and development contract before the contract was awarded or if he had to judge the commercial value of any invention when it was reported by the contractor. The difficulties would arise from several factors: first, the sheer volume of contracts and inventions; second, the extremely speculative nature of any prediction concerning the future adverse monopoly force of an individual contract or an individual invention; and third, the rigor of making an administrative decision that a particular contractor represents too large a concentration of economic power for the health of the economy and that therefore he should not be permitted to have patent privileges as a result of research performed at the request of the Government.

It should be remembered that the pace of invention and innovation is very fast and that few inventions or groups of inventions could so dominate an industrial field as to prevent the development of new and competing ideas.[44] Re-

[39] ASPR 9-107.1 (c) (1955). The present provision is ASPR 9-107.2 (b), paragraph (e) of the license clause (1960).

[40] In this respect it is probably meaningless to compare the program of the Department of Defense, with $5.2 billion prime contractor awards for research, development, test, and evaluation work in Fiscal Year 1959, against that, say, of the Department of Agriculture, whose research program is between $1.5 and $2 million annually, placed pretty largely at universities and research institutions. See December 2, 1959 letter of the Department of Agriculture drawing the distinction, Long Committee Hearings, pp. 354-355 (1959).

[41] Report of the Attorney General under the Defense Production Act, Nov. 9, 1956, p. 10.

[42] Study Group 14, an inter-agency task group, organized August 5, 1957 under the chairmanship of the Commissioner of Patents. See Long Committee Hearings, pp. 166, 167-175 (1959).

[43] December 7, 1959 letter of the Acting Assistant Attorney General, Antitrust Division. Long Committee Hearings, pp. 422-25 (1959).

[44] Frost, *supra* note 16, 27-28 (1957).

title from those universities and other institutions which did not have a policy of applying for patents.[30] However, after a period of time this policy provision was found inoperative because there were so few cases which fell under it.[31]

The answer to the question—"Can we get the best research from those most skilled in the art?"—depends pretty largely on the incentives offered to those who must undertake the research if it is to be effectively done. Government research and development has a variety of qualified incentives and deterrents, the importance of which may vary significantly from project to project. By and large the costs of the contractor are covered, although there are risks involved if a contract should be terminated for the convenience of the Government. There is a fee, but not a large one by commercial standards. The contractor can perfect ideas, but often they are not in areas which will have a commercial payoff. A contractor may be able to keep a larger staff, but this benefit may be limited in practical terms only to those contractors who do a lot of Government research. The contractor will acquire new know-how, which, however, must be shared with all others. There is a chance of follow-on procurement, which may be valuable if production runs are sizable; however there is no guarantee that the ideas will be adopted or that production orders will necessarily be placed with the developer, as for example, when an idea is a component of a larger package. There is the chance a contractor will get a jump on his competitors, but the value of this in a given situation may be largely theoretical. The work undertaken for the Government may be fruitless. There is a patriotic motive which cannot be discounted, because so many firms have taken losing contracts in the interest of aiding national defense.

Finally (for purposes of this discussion) there is the patent incentive. This incentive works in a number of ways. The possibility of deriving a valuable commercial property from the Government-sponsored research is an effective stimulant to compete for, accept and perform whole-heartedly a Government project. The fact that patent protection may be available encourages the contractor to bring forth his new ideas at the earliest stage. As the history of the law of trade secrets shows, if such protection were not available, he might well otherwise attempt to hold them to himself as long as possible.

The patent opportunity is clearly not the only incentive which leads commercial contractors to accept Government contracts. However, it is a question which assumes a very large significance to a contractor as the work draws more and more upon his independent background investment in facilities, know-how, and personnel.[32] The firm usually has a patent position to protect and develop. Giving up title to patents on ideas which are further advances along the lines of a company's commercial business means that the commercial position, to the extent that it rests upon patents, would be increasingly jeopardized. It is one thing to expect a contractor to create products for the Government in the areas of his special knowledge and skill for the interests of national defense. It is another to

[30] ASPR 9-107.2 (f) (1950)

[31] ASPR 9-107 (1955)

[32] From this point of view it is misleading to equate the Atomic Energy Commission, which operates in a somewhat narrow, definable area that in practical terms has always been a Government monopoly, and the National Aeronautics and Space Administration, which, like the Department of Defense, draws on the privately-acquired skills and experience of private companies in exceedingly diverse fields.

and Astronautics concluded that "retention of title by the contractor is much more likely to result in commercial application and a corollary strengthening of the national economy." [24]

The only point we are trying to make here is that it does not seem that the public interest inevitably requires that the Government hold title to a patent and defeat the patent privilege. What constitutes the public interest may not be read so simply. As we shall consider in the following pages, many other factors, including the successful accomplishment of the agency's mission, enter into the equation. If the motivation for the Government's taking title across the board were just to prevent the exercise of any real patent rights in inventions to which the Government has contributed financially, the administrator operating without statutory direction might well pause, since that purpose undercuts some of the basic justifications of the patent system and thus poses questions for the Congress to decide.

It is important to note at this stage, however, that there may be other good reasons for Government acquisition of title. For example, in a new technological field in which there is no significant non-Governmental experience to build upon, such as the development of Atomic Energy from the great scientific discoveries of the thirties, the very newness of the work may mean that the initial inventions would be likely to dominate the field or be of critical significance in it. In such a case it may be desirable for the Government to hold title, not for reasons of security [25] or maintaining a Governmental monopoly, but so that the necessarily few contractors at the beginning do not obtain exclusive control when the field develops commercially.

In fields vitally and immediately affecting the public welfare, such as broad-scale penicillin research, weather control, or water desalinification, inventions may be made of such great importance that they will be brought to the point of ready availability for public use without depending in any way on patent incentives. Title in the Government would be a recognition of this overriding public interest. If a contractor's work for the Government is largely coordinating and directing the work of other contractors the Government may wish to acquire title to prevent the possibility or appearance of private advantage as to the ideas of others. It seems clear that if a situation similar to one of the foregoing is contemplated the desirability of placing title in the Government should be seriously considered.

There is another purpose to be served by the Government acquiring title to patents. The law provides that the Government may not be restrained from using any invention on which a U. S. patent has been granted, provided only that it pay reasonable compensation for unlicensed use.[26] From the point of view of a defense against the claims of infringement a royalty-free license is sufficient. Thus, if the Government has such a license it does not need title for defensive reasons, so long as the underlying patent issues to someone. However, if no one else is to hold title the Government must itself acquire the title as a means of defense against later

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[24] Proposed Revisions to the Patent Section, National Aeronautics and Space Act of 1958, Report of the Subcommittee on Patents and Scientific Inventions to the House Committee on Science and Astronautics, 86th Cong. 2d Sess., p. 38 (1960) [hereinafter cited as the Mitchell Committee Report].

[25] This may he accomplished under the Invention Secrecy Act, codified as 35 USC 181-188.

[26] 28 USC 1498.

II. The Patent System and Procurement Policy

The basic point of departure, it seems to us, is that a patent system exists, authorized by the Constitution,[14] enacted by the Congress,[15] and adhered to by American inventors and industry since the early days of the Republic. For better or worse, the patent system has been established in our country as the means for encouraging invention, disclosure, and commercial exploitation of new ideas.

There seems to be little doubt that the system in its main outlines has worked and continues to work. Paradoxically, the protection afforded by a temporary limited monopoly has proved to be a major incentive to create and finance the development of new products in a competitive enterprise system. The very presence of a protected area of invention has stimulated new ways of doing things to meet the challenge and advance the art. The patent system has become one of the fundamental working assumptions upon which a large part of American industry functions. Many businesses, particularly small businesses, owe their existence and their ability to stand on a plane of equality with larger competitors to a solid and developing patent position.[16]

To be sure, evils and abuses are possible in the patent system, and there is much interesting debate on whether and how far the system needs modification to meet new circumstances.[17] Opinions differ on the questions presented.[18] But the essential thing for the policy administrator is that the patent system is "there", and he must take account of it in framing his policy.

In taking account of the patent system the policy administrator must also note that a Government-owned patent has a somewhat unusual satus within the patent system. The Government acquires title to many patents. But it does not manage its patent portfolio as a private owner might. With rare exceptions [19] it offers a nonexclusive, royalty-free license [20] under patents to anyone who asks,

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[14] U. S. Const. Art. I, § 8, cl. 8.

[15] 35 USC 1-293 (1952).

[16] "It is impossible for a new company involving a major advance in science or technology—first, to be properly financed; second, to go through the extremely difficult periods of study, invention, development, engineering, and production; third, to afford to advertise and to afford to distribute—all this is impossible without protection by patents." Edwin H. Land (President, Polaroid Corporation), *"The Role of Patents in the Growth of New Companies,"* speech before the Boston Patent Law Association, April 2, 1959. See also Berle & De Camp, *Inventions, Patents, and Their Management* 246-249 (1959), and Frost, *The Patent System and the Modern Economy* 6-19, Study No. 2, Senate Subcommittee on Patents, Trademarks, and Copyrights, 84th Cong. 2d Sess. (1957).

[17] One obvious improvement would seem to be for Congress to enable the Patent Office to hire and retain in sufficient quantity the highly skilled people who serve as patent examiners. See the various studies published by the Senate Subcommittee on Patents, Trademarks, and Copyrights.

[18] Compare the conclusions of an economist: "If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the hasis of our present knowledge, to recommend abolishing it. . . . While economic analysis does not yet provide a basis for choosing between 'all or nothing,' it does provide a sufficiently firm basis for decisions about 'a little more or a little less' of various iugredients of the patent system." Machlup, *An Economic Review of the Patent System* 80, Study No. 15, Senate Subcommittee on Patents, Trademarks, and Copyrights, 85th Cong. 2d Sess. (1958).

[19] Such exceptions might include cases where the Atomic Energy Commission grants back an exclusive license to a contractor. See *infra,* note 36.

[20] 34 Op. A. G. 320 (1924).

workers. The employee is supposed to devote all his effort to the work of the employer. On the other hand, the Government does not usually seek out the contractor to create inventions which the government will exploit commercially. In the great bulk of Government work, contractors are not hired to invent; they are hired to develop specific needed products. Inventions made under programs of this kind are by-products.

In most cases, too, it is the contractor rather than the Government who furnishes the facilities, know-how, and personnel. The Government is but one customer of the services of the contractor,[7] who has other customers and commitments to satisfy. Finally, there is no element of competition between employer and employee when the employer owns the employee's inventions, since their association is a joint enterprise for mutual benefit. But if the Government were to acquire title to patents on the contractor's inventions they would be opened up to the contractor's commercial rivals.[8] The Government thus represents in a sense the source of a potentially significant competing force.

This point underlies the difficulty with another analogy which is often pressed as a guide to policy, namely, that the Government should obtain title to its contractors' inventions because private companies obtain title in their own research contracts. The factual basis for this proposition is somewhat doubtful. It is true that private companies do obtain title when their research is performed for them by companies specializing in research for hire or by a non-profit institution which does not exercise patent rights itself. But available evidence suggests that most companies contracting with a competing firm for research accept something less than title to the latter's inventions, usually a license of some kind.[9] This reflects in large measure the realities of the marketplace, because the inventive capacities of a firm are not normally on hire to business competitors.

The Government introduces some different elements into the picture. It of course enjoys legal and economic powers which no private company possesses, and it has a special call on the services of industry because it serves needs common to all and greater than any single interest. In the usual case, moreover, it is not a potential business competitor of its contractors. However, when it bargains for title to a contractor's invention, it represents in part potential active business competition, since that title will as a matter of government-wide policy be turned over freely to any commercial rival.

Hence if there is any strength in the analogy between the Government and a private company in the matter of patent policy, it tends in the direction of the Government's obtaining something less than title to contractors' inventions. But because the position of the parties is so different, and their aims and methods so divergent, the analogy should be rejected as unsound for purposes of framing policy.

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[7] Of course there are a few contractors who hy choice or otherwise are engaged in work solely for the Government.

[8] See discussion *infra* in text of this article.

[9] See letters indicating industrial practices in Hearings before a Subcommittee of the Senate Select Committee on Small Business, 86th Cong. 1st sess., pp. 446-454 (1959) [hereinafter cited as "Long Committee Hearings"]. Additional industry letters are on file with the Committee.

THE FORMULATION OF FEDERAL PROCUREMENT PATENT POLICY: AN ADMINISTRATOR'S VIEW

Graeme C. Bannerman, Howard C. H. Williamson**, and R. Tenney Johnson****

Federal policies on the division of patent rights in inventions arising out of research and development sponsored by the Federal Government are once again coming under review. The advent of the so-called technological race, the awakening of industrial interest in research, and the sheer volume of Government spending—variously estimated at one-half to two-thirds of the total national research and development effort, measured in dollars—together with concern about possible effects on the nation's economic life, combine to make such a review pertinent and timely.

Before radical changes in present policies are made, however, this very complicated subject should be studied in the detail it deserves. To be sure, few would deny [1] that when an invention is conceived or first reduced to practice in the course of a Government contract with research and development as one of its purposes the Government should acquire at least a comprehensive license to cover all future uses of that invention by or for the Government.[2] Should the Government acquire additional property rights in such an invention? Too often this problem has been argued in terms of slogans and absolutes.[3] Yet few questions of policy exceed this one in complexity. Simple enough on the surface, it reveals itself upon examination as compounded of most diverse and conflicting considerations. No one view seems to solve all the problems effectively or equit-

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[1] For a dissenting voice, see Hearings before the Subcommittee on Patents and Scientific Inventions of the House Committee on Science and Astronautics, 85th Cong. 1st sess., pp. 555-558 (1959) [hereinafter cited as "Mitchell Committee Hearings"]. Whether the Government should be entitled to a license when an invention on which a patent application on file is first actually reduced to practice under a Government contract was also a controversial matter at one time. This problem and the question of whether the Government should require license or title to background patents as a condition of performing supply or research contracts will not be discussed in this paper.

[2] For rare exceptions, see Armed Services Procurement Regulation (ASPR) 9-107.2(a), 32 CFR 9-107.2(a) (1961), listing circumstances in Department of Defense contracts under which a contracting officer may exclude certain inventions from the license grant for reasons of equity.

[3] *E.g.*, "Government pays, Government must own", "The Government has no reason to own a patent", "Unless the Government takes title the public will pay twice", "The license policy is a giveaway." To see how an absolute can he misleading, take the argument that patent policy should be based on "the principle that Government expense creates Government property". Two questions come to mind immediately: What kind of property is meant and for what reason does the principle apply? When the Government acquires a license to an invention made under a Government contract it acquires a valuable property right. The issue is, should it get more? Secondly, since the principle is not universal and does not apply, say, in the case of Federal aid to education or a grant for research, stating it leaves unanswered why it should apply to patent policy.

of the United States. Although NASA's patent licensing regulations have not yet been issued, certain basic policies have been announced.[31]

It will be NASA policy to grant a nonexclusive, royalty-free license to the NASA contractor responsible for the making of an invention which becomes the property of the United States pursuant to section 305 of the Act. This license will be revocable at the option of the Administrator if the recipient fails, before the end of the fifth year from the date of the issuance to the Administrator of a United States patent on the licensed invention to demonstrate that the invention has been developed to the point of practical application. NASA will propose, during this period of time, which should be adequate in most instances for new product development, to grant other nonexclusive licenses, revocable on the same conditions, to qualified applicants. If the invention has not been developed by the end of this period, it would be reasonable to conclude that a factor precluding development was the lack of exclusive rights, typically available under the patent system, which would justify the risks of development. NASA would then be in a position to rectify this situation by revoking all nonexclusive licenses and granting an exclusive license under the condition that the invention would be developed within a specified period of years. There would be reserved from the exclusive license a nontransferable, royalty-free right for the practice of the invention by or on behalf of the United States or any foreign government pursuant to any treaty or agreement with the United States. Failure to comply with the condition would result in revocation of the exclusive license.

VI. Conclusions

Unlike the Department of Defense, which has not been restricted by statute in developing its policies concerning contractors' inventions, NASA operates within the confines of an elaborate set of statutory provisions. Because of these provisions, NASA's policies and procedures necessarily differ from those of the Department of Defense. They also differ from those of the Atomic Energy Commission, although there are striking resemblances between the patent provisions of the Atomic Energy Act of 1954[32] and the National Aeronautics and Space Act of 1958.

NASA's policies and procedures have been developed with three principles in mind: first, that the burden of administration, both upon NASA and its contractors, should be lightened as much as possible within the framework of the present statutory provisions; second, that economic progress, the strengthening of small business, and the long recognized benefits of the patent system are normally served best by the retention of rights to inventions in the hands of private parties who are motivated to exploit them for commercial purposes; and third, that the Government has a continuing interest in making sure that inventions produced in the course of research and development work financed with public funds are actually put to practical use.

It is in giving effect to the third of these principles that NASA has pioneered in the development of Government patent policies. While recognizing the desir-

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[31] Hearings before a Subcommittee of the Senate Select Committee on Small Business, 86th Cong., 1st Sess. at 261-262 (1959), on the Effect of Federal Patent Policies on Competition, Monopoly, Economic Growth, and Small Business.

[32] 68 Stat. 943 (1954), 42 USC 2181-2190.

B. Criteria for the granting of waivers.

NASA has established criteria by which inventions are grouped into two general classes—first, those inventions not generally eligible for waiver; and second, those inventions with respect to which a prima facie case for waiver may be established. Concerning the first class, it is NASA's policy that the interests of the United States would not generally be served by waiver of its rights with respect to any invention which is "primarly adapted for and especially useful in the development and operation of vehicles, manned or unmanned, capable of sustained flight without support from or dependence upon the atmosphere," or is "of basic importance in continued research toward the solution of problems of sustained flight without support from or dependence upon the atmosphere." [21] Even with respect to such inventions, however, the Administrator is not precluded from granting a waiver whenever it appears to his satisfaction that waiver would be in the interests of the United States in accordance with the basic policy stated above.[22]

With respect to the second class, NASA considers that the following circumstances establish a prima facie case for waiver of title: [23]

First, where the invention was conceived prior to and independently of, but was first actually reduced to practice in, the performance of work under a contract of the Administration, and the invention is covered by a United States patent issued or application filed prior to the award of the contract; or

Second, where the invention was conceived or first actually reduced to practice in the performance of a contract of the Administration for research work with a nonprofit organization whose primary purpose is the conduct of scientific research, and the contract does not call for the delivery of models of equipment or the development of practical processes; or

Third, where it appears that the invention has only incidental utility in the conduct of activities with which NASA is particularly concerned and has substantial promise of commercial utility; or

Fourth, where the invention is directed specifically to a line of business of the contractor with respect to which the contractor's previous expenditure of funds in the field of technology to which the invention pertains has been large in comparison to the amount of funds for research or development work in the same field of technology expended under the NASA contract in which the invention was conceived or first actually reduced to practice.

If an invention does not fall within any of the foregoing categories, waiver may nevertheless be granted whenever it appears to the satisfaction of the Administrator that such action would serve to carry out NASA's basic waiver policy.[24]

C. Voidability of Waivers.

As mentioned above, the Administrator of NASA has the statutory responsibility for protecting the "public interest" in exercising his waiver authority. He

[21] 14 CFR 1245.104 (a).
[22] *Ibid.*
[23] 14 CFR 1245.104 (b).
[24] 14 CFR 1245.104 (d).

In this situation, when the invention has not become the exclusive property of the United States by operation of subsection 305 (a) of the Act, the contractor is required to specify whether or not a United States patent application will be filed by or on behalf of the contractor. If the contractor does not choose to file snch an application, the contractor must convey to the Government its entire interest in the invention, reserving only a nonexclusive, royalty-free license and the right to file applications for patents in foreign countries.

If the contractor chooses the second alternative stated above, it is given eight months from the date of reporting the invention to NASA to file a patent application. If the contractor should fail to file the application within that period, then the presumption stated in the clause takes effect. If, however, the contractor files the application within the time prescribed, it mnst simultaneously file with the Commissioner of Patents a sworn statement conforming to the requirements of subsection 305 (c) of the Act which sets forth the full facts concerning the circumstances under which the invention was made. The contractor must also furnish NASA with a copy of the application and the statement so that the Administrator may review the information furnished and notify the contractor of his determination as to whether or not the invention has been made under the circumstances described in subsection 305 (a).

One might ask why the contractor wonld wish to file an application for patent before rights in the invention have been settled. The answer lies in the fact that subsection 305 (d) of the Act[17] provides an opportunity for a review by the Board of Patent Interferences and the Court of Customs and Patent Appeals of any action taken by the Administrator on applications for patents filed in the Patent Office. By filing its application before a determination has been made, the contractor will cause the subsequent action of the Administrator to be subject to such review.

The third alternative stated above has been made available to contractors in recognition of the fact that a contractor may well be satisfied with the rights which it could acquire by waiver and may wish to forego consideration by the Administrator of the facts concerning the making of the invention if it were reasonably certain that a request for waiver would be granted. If the contractor chooses this alternative and reqnests an advisory opinion, it will be notified of NASA's decision within three months of the request. If it then considers that the advisory opinion is unfavorable to its interests, it may still take issue with the presumption by submitting a written statement of facts concerning the circumstances nnder which the invention was made or by filing a patent application for the invention before the expiration of the eight-month period.

IV. WAIVER OF THE RIGHTS OF THE UNITED STATES

A. Basic policy.

The fact that an invention is determined to have been made under the conditions described in subsection 305 (a) does not necessarily resnlt in the invention's becoming the property of the United States. The Act gives the Administrator broad discretionary authority to waive the rights of the United States to contractors' inventions and to determine the terms and conditions of waiver.

[17] 42 USC 2457 (d). See note 7 *supra*.

III. The "Property Rights in Inventions Clause" in NASA Contracts

A. *Reporting technical information.*

NASA's "Property Rights in Inventions" clause [13] is designed to satisfy the reporting requirements of subsection 305 (b) as well as to enable the Administrator to make the determinations specified in subsection 305 (a) concerning the conditions under which an invention has been made.

NASA regards subsection 305 (b) as having the sole purpose of enabling it to acquire such technical information as may be necessary to protect the Government's interest in contractors' inventions. It does not interpret this provision of the Act as requiring the furnishing of manufacturing or other technical data of a proprietary nature. To the extent that NASA requires the latter type of data, its needs are derived from the specific subject matter and purpose of the procurement involved, not from the requirements of section 305 of the Act.

In accordance with this view of the law, NASA regulations provide that the contractor "may initially furnish to the contracting officer only such technical information as is required for the purpose of identifying the invention and determining its utility in the conduct of aeronautical and space activities."[14] Such reports must be furnished promptly upon the making of the invention. In addition, as a policing device, the contractor is required to furnish such a report immediately after the execution of the contract with respect to inventions made before award of the contract but upon an understanding in writing that a contract would be awarded. For the same reason, a final report is required prior to final settlement of the contract in which all reportable inventions must be included, whether or not covered in prior reports. [15]

B. *Procedure for making determinations under subsection 305(a)*

As mentioned above, an invention made in the performance of work under a NASA contract becomes the property of the United States only if the Administrator makes a determination that it was made under the circumstances specified in subsection 305 (a). [16] The Act does not operate by itself to vest any rights to inventions in the Government.

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[13] 14 CFR 1201.190. The clause (par. (h)) obligates the contractor to include clauses in each snbcontract which follow substantially the provisions of the prime contract pertaining to patents. NASA's regulations (14 CFR 1201.101-2 (a)) provide that in no event shall the price of a NASA contract be increased merely because of the inclusion of the "Property Rights in Inventions" clause in the contract.

[14] 14 CFR 1201.101-3 (b). To enable NASA to prepare and prosecute applications for patents on inventions when such action is necessary in the Government's interest, NASA requires that its contractors, upon request by the contracting officer, "prepare and furnish such additional technical descriptions of the invention as will be adequate for ready transposition to patent specification form and for effective prosecution of a patent application." *Ibid.*

[15] Althongh subsection 305 (b) calls for a written report containing complete technical information concerning "any invention, discovery, improvement, or innovation," NASA contractors have been assured that they are not reqnired to report every trifling improvement or innovation but only those which appear to fall within a statntory class of patentable subject matter (see 35 USC 101, 171) and which have a reasonable probability of being patentable. However, any doubts respecting patentability are to be resolved by the contractor in favor of reporting the invention. 14 CFR 1201.101-3 (a).

[16] Maltby, *supra* note 3, at 69, notes that no criteria of the type set out in subsection 305 (a) have ever been established by U.S. law for use as between master and servant, nor have they been employed between the Government and its contractors prior to enactment of the National Aeronantics and Space Act of 1958. The author believes that the criteria originated

to enable the Administrator to acquire exclusive property rights to it on behalf of the United States, the Administrator may waive "all or any part" of those rights if he determines "that the interests of the United States will be served thereby."

The foregoing observations hardly seem necessary, since they are evident from the most cursory reading of section 305. Nevertheless, they appear to require reiteration from time to time, since public comment on this section of the Act frequently gives the impression that a contract with NASA necessarily entails the loss of patent rights which the contractor would otherwise be entitled to retain. It should be clearly understood that a NASA contractor may retain property rights to inventions for any of the following reasons:

(a) The invention, although utilized in the performance of a contract with NASA, was made independently of any such contract.[8]

(b) The invention, although made under a NASA contract, was not made under any of the conditions specified in subsection 305 (a) so as to warrant a positive determination by the Administrator pursuant to that subsection.

(c) The Administrator, in the exercise of his board discretionary powers, waives the rights of the United States to the invention.

On the other hand, while recognizing the opportunities for NASA contractors to retain private rights to inventions, there can be little doubt that the provisions of section 305 were intended by the Congress to result in some measure of acquisition by the United States of property rights to inventions made in the performance of NASA contracts. If this were not so, it would have been far simpler to omit this section from the Act entirely, thus leaving NASA in the same legal posture as the Department of Defense so far as contractors' inventions are concerned. The Congress was well aware that the Department of Defense, free from any statutory strictures and acting without specific legislative guidance, normally acquires only a nonexclusive, royalty-free license to inventions made in the performance of its contracts.[9] If such a policy were deemed by the Congress to be acceptable for NASA, no legislation would have been necessary, for it could have been developed administratively just as it has in the case of the Department of Defense. The detailed statutory provisions concerning this subject in section 305 of the Act thus seem consistent only with a Congressional intent that NASA not follow the patent policies of the Department of Defense but that the Administrator discriminate carefully, in the light of "the interests of the United States," between those inventions which should become the property of the Government and those which should remain in private ownership.

Having in mind these general observations, let us turn to the questions stated above.

[8] Where such inventions are covered by "background" patents enforceable against the Government, it is NASA policy to pay reasonable compensation for the acquisition of such rights as may be necessary to preclude infringement. 14 CFR 1201.101-1.

[9] Department of Defense policies and contract clauses pertaining to inventions made in the performance of contracts are set forth in Section IX of the Armed Services Procurement Regulation, 1960 edition, 32 CFR, Part 9. For a discussion of the effects of these policies, see Maltby, *supra* note 3. In the words of the author, "A very broad-based expansion of research in military-related fields among scientific institutions and industry groups, of great benefit to the national defense and to the general economy, has occurred under this policy of mutual respect for property rights. It is a policy now well market-tested and of acknowledged value in Department of Defense contracting."

Government of the use of Government facilities, equipment, materials, allocated funds, information proprietary to the Government, or services of Government employees during working hours; or

(2) the person who made the invention was not employed or assigned to perform research, development, or exploration work, but the invention is nevertheless related to the contract, or to the work or duties he was employed or assigned to perform, and was made during working hours, or with a contribution from the Government of the sort referred to in clause (1),

such invention shall be the exclusive property of the United States, and if such invention is patentable a patent therefor shall be issued to the United States upon application made by the Administrator, unless the Administrator waives all or any part of the rights of the United States to such invention in conformity with the provisions of subsection (f) of this section.

(b) Each contract entered into by the Administrator with any party for the performance of any work shall contain effective provisions under which such party shall furnish promptly to the Administrator a written report containing full and complete technical information concerning any invention, discovery, improvement, or innovation which may be made in the performance of any such work.[5]

Two later subsections deal with the Administrator's authority to waive the United States' rights to inventions, and his authority to grant licenses to practice inventions for which the Administrator holds patents on behalf of the United States:

(f) Under such regulations in conformity with this subsection as the Administrator shall prescribe, he may waive all or any part of the rights of the United States under this section with respect to any invention or class of inventions made or which may be made by any person or class of persons in the performance of any work required by any contract of the Administration if the Administrator determines that the interests of the United States will be served thereby. Any such waiver may be made upon such terms and under such conditions as the Administrator shall determine to be required for the protection of the interests of the United States. Each such waiver made with respect to any invention shall be subject to the reservation by the Administrator of an irrevocable, nonexclusive, nontransferable, royalty-free license for the practice of such invention throughout the world by or on behalf of the United States or any foreign government pursuant to any treaty or agreement with the United States. Each proposal for any waiver under this subsection shall be referred to an Inventions and Contributions Board which shall be established by the Administrator within the Administration. Such Board shall accord to each interested party an opportunity for hearing, and shall transmit to the Administrator its findings of fact with respect to such proposal and its recommendations for action to be taken with respect thereto.

(g) The Administrator shall determine, and promulgate regulations specifying, the terms and conditions upon which licenses will be granted by the Administration for the practice by any person (other than an agency

[5] 42 USC 2457 (a) - (b).

Hearings before the Patent Subcommittee of the House Committee on Science and Astronautics [31] established that the interests of the public, of small business and of the free enterprise economy will normally best be served by a policy of retaining to the Federal Government a non-exclusive license to use any and all patented inventions subject to the right of the patent owner to be compensated in an amount not less than a reasonable royalty—unless the invention arose out of Federally-financed research and development without substantial prior contribution of time, effort, knowledge or know-how on the part of the patentee.

The policy should further provide that the Government obtain a royalty-free license where the Government contribution of funds or materials has been so substantial that it would be inequitable to demand the payment of royalties for the use of the inventions resulting from such contracts.

Finally, it must be conceded that unusual circumstances may require the entire right, title and interest to vest in the Government where the invention has been produced with Federal money. The possibility that such circumstances might occur was recognized by the Science and Astronautics Committee last year and provisions to accommodate this contingency were approved by the House in legislation to amend the Space Act of 1958.[32] In addition, the Committee report spelled out guide-lines to help determine when such unusual circumstances might exist.[33]

CONCLUSION

The traditional willingness of the Government to be satisfied with a license to inventions produced through Federally sponsored research has been dubbed by some as a "give-away". But I believe we tend to break faith with our inventors when we insist upon the Government taking title to their inventions. This is "Indian giving". If the Government grants a patent, it should honor its obligations under the patent without trying to find excuses for taking back the very grant which was the inducement offered the inventor to extend his best efforts on behalf of society.

We must remember that a major identifying difference between democracy and communism lies in the legal concept of property. It may be that we are reaching some areas of science and technology where it will not be in the public interest to permit the ownership of inventions to vest in private hands. Buch such areas, under the American system, will always be very limited. Meanwhile onr legislative policy should be designed to support free enterprise, leaving to our inventors the property rights to which they are entitled by tradition and by law—and taking for the Government only what is necessary to fulfill its just needs.

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[31] *Supra* note 2.

[32] H.R. 12049, 86th Cong., 2d Sess. § 305 (1960), passed by the House June 9, 1960; died in the Senate.

[33] H.R. Rept. No. 1633, 86th Cong., 2d Sess. 8-10 (1960).

correspond more closely to those of the National Science Foundation than to those of the Atomic Energy Commission.[28] The objectives of the National Aeronautics and Space Act of 1958 were clear, and it has since been demonstrated that many of the means of obtaining the objectives were already known to industry. For example, the advances in technology of electronic computers and chemistry, which took place between the end of World War II and the advent of the Space Age, were products of private enterprise and, in many cases, individual initiative.

At the time, however—even though the Act was contrary to predominant Government patent policy in effect—Congress felt obliged to require the Space Agency to take title to all patents arising out of Government-financed research *unless the Administrator determined that it was in the public interest to waive title.*[29] Yet while the Congress gave the Administrator the power to waive title in the public interest, it failed to give him any criteria for determining what was in the public interest. As a result, waiver has been allowed in less than half a dozen instances since the Act became effective.

A Legislative Course for the Future

What role should Congress play in determining Government patent policy?

According to the concept of separation of powers among the Legislative, Executive and Judicial branches, it is not customary for Congress to define so narrowly matters upon which it legislates as to leave no room for administration by the Executive branch or for interpretation by the Judicial branch. However, since Congress serves as the voice of the electorate, Congress is expected to lay down in principle the manner in which the operations of the Federal Government are to be conducted in the best interests of *all* the people.

To the extent that Congress lays down finite details for the operation of the Executive branch, it may usurp functions properly belonging to the President. But it is the province of the Legislature to act where it is apparent that the acts of the public or of another branch of government will be detrimental to society as a whole. So long as the Executive is conducting the business of the Government in a manner enhancing the best interests of the public, there is rarely cause for prohibitive legislation. By the same token, there should be little necessity for mandatory legislation, since it is the role and function of the Executive to take the initiative in administering the affairs of the United States.

Why should we depart from this philosophy where patents are concerned?

The patent system has played an important part in the economic and social development of our nation. True, it has received its share of criticism, both as to mode of administration and substantive content.[30] There are those who would do away with the patent system and substitute a "reward" of the Soviet kind as an incentive to promote the progress of science and the useful arts. There are

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[28] Report on Proposed Revisions to the Patent Section, National Aeronautics and Space Act of 1958, *supra* note 2, at 1-6.

[29] *Supra* note 7, Sec. 305 (a), (f), 42 USC 2457 (a), (f).

[30] *Hearings on Patent Policies of Departments and Agencies of the Federal Government before the Senate Select Committee on Small Business,* 86th Cong. 1st Sess. (1959). *Hearings on Government Patent Practices before the Subcommittee on Patents, Trademarks and Copyrights of the Senate Committee on the Judiciary,* 86th Cong., 2nd Sess. (1960).

dealt with problems relating to patents and inventions arising out of Government contracts. It was developed by the armed forces on the basis of long experience in Government procurement, and while not entirely approved and accepted by industry, was agreed to as being reasonable criteria for Government contracting procedures. For the most part, these regulations do not contemplate Federal ownership of patents. They do give the Government free use of inventions arising out of Defense research contracts and freedom to have them made or operated by any producer.

Also during World War II, the super-secret Manhattan Project was undertaken to develop the use of fissionable material (atomic energy) primarily for its military value. The real discoveries upon which this development work was based, we now know, were made by scientists outside the United States.[22] However, development of the inventions to the point of usefulness in military weapons and adaptability for mass production required the training of personnel in a new and commercially unknown field of technology. The best available scientific minds in the United States and the best qualified industrial firms were recruited to carry forward atomic energy work in the interests of national defense. While inventors and industrial participants recognized that commercially valuable applications of atomic energy might some day be forthcoming. they contributed to the effort without thought of future reward. The effort was made to preserve the nation and its free enterprise system.

Postwar Measures

It was not until after the bomb had been dropped on Hiroshima and Nagasaki that control of fissionable material acquired legislative recognition, and it was the Atomic Energy Act of 1946 [23] which inaugurated a new concept of the patent grant. It not only prevented the issuance of patents for inventions or discoveries used solely in the utilization of special nuclear material or atomic energy for atomic weapons, but revoked previously granted patents for such inventions or discoveries, subject to just compensation.[24] The Act also gave the Atomic Energy Commission authority to seize patents or patent applications as well as requiring the Commission to take title to any invention or discovery useful in the production or utilization of atomic energy when the discovery is made or conceived under any contract with the Commission, except that the Commission is authorized to waive its claim to title under such circumstance as the Commission deems appropriate.[24a] As to all other inventions, the Commission is left free to adopt whatever patent policy it wishes, the law merely stating: "Nothing in this Act shall affect the right of the Commission to require that patents granted on inventions made or conceived during the course of federally financed research or operations, be assigned to the United States." [24b]

The limitations on the right of private ownership of patents for inventions or discoveries for atomic weapons and of patents for inventions or discoveries useful in the production or utilization of special nuclear material or atomic energy

[22] Einstein, Meitner, Bohr, Fermi, et al.
[23] 60 Stat. 755 (1946).
[24] 60 Stat. 768 (1946), 42 USC 2181.
[24a] 42 USC 2182.
[24b] 42 USC 2189.

Government today has a stake in science just as it has in agriculture, commerce and labor. But, if the present rate of extension and present trends to Federal ownership continue, we may be in danger of permitting the Government to displace free enterprise in research and development—and science will become largely socialized. Should we socialize shipping, the air lines, and agriculture because we subsidize them? This is no personal, esoteric fear; it has been voiced countless times by respected scientists who watch the contemporary scene with genuine apprehension.

LEGISLATION IN THE 20TH CENTURY

Let us see what Congress has done this century to carry out its responsibility to promote the progress of science and useful arts by securing to inventors the exclusive rights to their discoveries.

As pointed out, Congress acted in 1910.[15] to correct an inequitable situation which arose out of the basic principle of sovereign immunity to suit. The waiver of immunity to suit for patent infringement did not constitute a "give-away". It merely preserved the right accorded inventors under the Constitution. It did, however, have the effect of reserving to the Government a non-exclusive license to use any and all patented inventions. The only condition imposed was that the Government might be required to pay a reasonable royalty if the fact of infringement and the question of validity of the patent should be resolved in favor of the patentee by the Court of Claims (which, historically, is an arm of the Congress of the United States, operating within the framework of the Federal judicial system [16]).

In view of the contingent liability of the Government for payment of a royalty under patents which it might infringe, it became necessary for the Executive to adopt certain policies with respect to procurement of items which might render the Government liable for infringement. In 1910 there was no Congressional mandate by which the procurement authorities were to be governed in carrying out their duties, it being understood that they would employ the best possible procurement practices and obtain for the Government the items needed at the lowest possible price, taking into account the fact that infringement of a patent might be involved in fulfilling the contract.

In the course of conducting its procurement activities, the Executive, through its respective branches, promulgated regulations and formulated "patent" clauses to be incorporated in procurement contracts, each agency adopting the regulations it felt best suited to its purposes.[17]

As the need for improved equipment suitable solely or principally for Governmental use increased, it became necessary for the Executive to contract for specific research and development. Inasmuch as the Government would be the sole customer for such goods and the goods would not be likely to affect the free enterprise economy, it was only logical that the Government stand the cost of the research and development. By the same token, the contractor was aware of the provisions of the Act of 1910 which preserved to the Government

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[15] *Supra* note 12.

[16] 10 Stat. 612 (1855).

[17] *E.g.* War Department Procurement Regulations (WDPRs).

times only upon those who contributed to economic betterment or raised the standard of living by importing into the realm (or by devising from materials within the realm) something new and different, or at least something obtainable only with great difficulty.

The incentive afforded by an exclusive grant, even thus limited, also stimulated the citizenry to devise "inventions" which did not occur to others but which would be marketable, whether by barter and exchange or by sale.

Sovereigns operating under the monarchial concept of government not only encouraged but sometimes even financed expeditions to far-away lands to bring greater wealth and fame to the monarchy. Such expeditions were not undertaken by the subjects of the monarch without hope for a reward greater than the mere subsistence and passage provided by the monarch. The adventurer and explorer expected to be and usually was rewarded, both materially and by honors bestowed upon him, thereby encouraging him to re-embark upon new and more venturesome enterprises.

The patent laws of the United States [10] thus are not a departure from, but actually a continuation of, a concept which has substantial historical background. Our patent laws have been enacted by the Congress under the exclusive power delegated to it by the Constitution, which provides, among other things, that "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." [11]

Under our democratic system, which requires a free-enterprise economy for success, it is expected that the ingenuity and resourcefulness of individuals will be employed for the benefit of the citizenry as a whole, as well as for a reward commensurate with the contribution made by the entrepreneur to the improvement of his culture. Normally the entrepreneur operates independently of the sovereign and, to that extent, is free to bargain for the sale of the results of his efforts. With this incentive, he is encouraged to "invent" not only for the additional gain he will derive from his efforts but for the recognition which will be accorded him by his fellows.

Limitations on Federal Power

We cannot overlook the principle that, even under our democratic system, governmental sovereignty possesses certain basic immunities, such as immunity from suit by its citizens. On the other hand, it is equally settled that our Federal Government does not have inherent power to take title to property without legislative authority, and even then only by due process under the Constitution.

Congress has seen fit to waive sovereign immunity of the Government by permitting it to be sued for patent infringement under the Act of 1910.[12] The Act provides that whenever a patented invention is used or manufactured by or for the United States without license of the owner, the only remedy of the owner is to seek relief by a suit in the Court of Claims. In such suits the recovery is limited to a reasonable royalty. By this means, the Federal Government has

[10] 66 Stat. 792 (1952), 35 USC 1-293.
[11] Art. 1, § 8, Cl. 8.
[12] 36 Stat. 851 (1910).

OWNERSHIP AND USE OF SPACE AGE IDEAS

—A LEGISLATIVE APPROACH

*Overton Brooks, M.C.**

In the Space Age, creative thought and invention are imperative for any nation with a disposition to world leadership. In the United States we have learned from 170 years of experience that the greatest stimulus to invent is to permit the inventor the fruits of his work through our patent system.

Yet today, and partly because legislation establishing the National Aeronautics and Space Administration has restricted individual commercial rights in inventions made under NASA research contracts, we have handicapped ourselves in our efforts to lead the world in science and technology.

Such restrictions, as debate in Congress last June proved,[1] are the result of sincere but, I believe, misguided efforts to protect the taxpayer.

What happens when we require by law (as we now do) that inventions made under research contracts of NASA or of other Government agencies on behalf of NASA become the property of the United States? Several things happen, none constructive.

For one thing, the American space effort suffers because contractors (a) do not put forth their best efforts, or (b) they increase the cost of their research services, or (c) they refuse to take on the work which the Government needs.[2] As one of many examples, note the fact that American manufacturers best qualified to produce badly needed gravity instruments for our lunar flight program have flatly declined to contract with NASA because of its patent policies.[3] Note further that in 27 months of NASA operations involving close to a thousand research contracts which require full disclosure of technical information, a total of only 81 invention disclosures have been reported to NASA.[4] Net result: our space effort suffers; so does our standing in the world community; so does our national defense.

Secondly, the American patent system itself is undermined to the extent that our space effort affects patents. This is to a large extent, growing larger. NASA research and development contracts already approximate half a billion dollars annually, second only to the Defense Department and the Atomic Energy Commission in volume. In a very short time the volume of NASA research is likely to

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[1] 106 Cong. Rec. 11273, 11283-97; 11374-88 (1960).

[2] See *e.g.* Report of Subcomm. on Patents and Scientific Inventions, House Comm. on Science and Astronautics, 86th Cong., 2d Sess., Report on Proposed Revisions to the Patent Section, National Aeronautics and Space Act of 1958, 27-32 (Comm. Print 1960).

[3] See remarks of Rep. Olin E. Teague in the House of Representatives, June 9, 1960. 106 Cong. Rec. 11378.

[4] Information from Office of Assistant General Counsel for Patent Matters, NASA, as of December 31, 1960.

and sellers, moreover, public officials thus far apparently have learned precious little about the value of a dollar.[35]

If this publication really considers the level of morality in business higher than that in Government, it has no understanding of the role of Government in our society. It is American life in general that shapes and conditions the goals, methods, and ethical standards of men in politics and Government. The moral standards of the country provide the ethical environment which in turn conditions the standards of behavior of public officials. Low standards or high standards in the country generally are reflected in low or high standards in Government.

The insistence by patent lawyers and a segment of the business community on a double standard, a refusal by certain big concerns to do research for the Government during a national emergency unless they received all resulting rights, an attitude of trying to squeeze out of the Government whatever they cau, a feverish scrambling for all kinds of subsidies—all this can conduce only to the acceptance of ruthlessness and a very low level of morality in our national life.

Inventions resulting from Government contracts are the products of expenditures of public funds for the performance of a governmental function; the public has, through its representatives, ordered and paid for the research and the resulting knowledge and inventions. Why, then, should the public be taxed for its use or permitted to use it upon restrictive conditions advantageous to no one but the patent owner? There is no obligation on the part of the contractor to exploit the patent or to make the invention available for use by others; he may even suppress the invention if this would best serve his economic interests, with the result that technological improvements financed with public funds would be denied to the public to serve a private interest.

VII. Scientific and Technical Knowledge Are A Natural Resource—What Aims Should Control?

Scientific and technological research conducted or financed by the United States Government represents a vast national resource, rivalling in actual and potential value the public domain opened to settlement in the last century. Because the control of patent rights in inventions resulting from such activities means the control of the fruits of this resource, it is importaut to determine upon a policy for the Government which will have the following aims:

1. The policy should serve the public welfare, which would involve the most widespread use of the invention in the interests of the health, safety and prosperity of the Nation.

2. The policy should stimulate the progress of science and the useful arts.

3. Such a policy should be consistent with our American system of free competitive enterprise.

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[35] *Barron's*, October 10, 1960, p. 1.

are involved, its subcontractors are allowed to retain title to inventions, improvements and discoveries.

> On the other hand, when the Martin Company's *own* funds are involved, title to inventions conceived or reduced to practice by subcontractors vests in the Company.[33]

When corporations that seek contracts to do research for the Government employ their own scientific and technical staffs, they require an ironclad contract to assure them that all patent rights will belong to the employers. In other words, when the scientist takes a job with a contractor, he agrees to turn over all proprietary rights resulting from his work to his employer.

Similarily, the Government would be neglectful of the national interest if it did not secure for all the people the valuable rights for which it pays.

It is a well-known common law doctrine that when an employee, employed to engage in research, succeeds in inventing or developing, the invention is the property of the employer. This was stated very clearly in the Peck and other cases:

> By the contract Peck engaged to 'devote his time to the development of a process and machinery' and was to receive therefor a stated compensation. Whose property was the 'process and machinery' to be when developed? The answer would seem to be inevitable and resistless—of him who engaged the services and paid for them, they being his inducement and compensation, they being not for temporary use but perpetual use, a provision for a business, a facility in it and an asset of it, therefore contributing to it whether retained or sold . . . .[34]

Iu research the economic relationship of an employee to his employer is similar to that of a contractor selling his services to another person or firm. There may be some differences, but in essence these are not relevant. Such a fact that an employe generally works on the property of his employer whereas a contractor works on his own property perhaps physically distant from the Government is not crucial to our analogy. Both are selling research services; both are paid for these services; the type of product resulting from their work is the same. The factors being used are talent and background. The end product is knowledge, techniques, data, prototypes and all the rights appertaining thereto and this is what the Government pays for.

V. Goals of Our Society as Contrasted With USSR

We must remember that many of the basic goals of our country—maximum output, the highest rate of economic and scientific progress—are also among the most important goals of the Soviet Union.

It is true that in our country the output to be maximized in chosen chiefly by individual consumers. In the Soviet Union, on the other hand, the output to be maximized is chosen primarily by a central, dictatorial body. There is, thus, a difference in content. The goal is the same.

Where, then, do we differ from the Soviets? What makes our system different from theirs?

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[33] *Hearings, supra* note 12, p. 448.

[34] Standards Parts Co. v. Peck, 246 U. S. 59 (1926).

A relatively small number of small businesses have prospered because of the special patent privileges granted by the Government and would possibly be injured by their removal. This is not a necessary result. Such possible losses, however, are not of major significance when compared to the great gains which would accrue to the small business community, to the economy as a whole, and consequently, to the ultimate consumer if the Government adopted the policy of dedicating to the public that for which the public pays.

For every small business inconvenienced by the necessity to compete more vigorously, as a result of a policy of dedicating to the public patents paid for by the public, scores of small businesses would benefit by the ability to enter new fields from which they had hitherto been excluded. As a result of the Eastman Kodak judgment, opening up the technology of color film processing, for example, many new firms have come into existence. Where only one firm processed color film previously, there are now about eight concerns processing Kodachrome and over 200 processing Kodacolor, mostly small businesses, and offering strong competition to Eastman in many parts of the country. Similar examples can be found in many industries. The facts controvert any general statement that small business would suffer more than big business in a policy dedicating patent rights to the public. On the contrary, they have much more to gain.

There is an important difference between protecting small business and protecting particular small business concerns that happen to have favored positions. Small business can survive only if we try to invigorate competition. If we allow the present Defense policy to continue; we are not really aiding small-business men; we are merely helping a number of giant firms plus a small minority of small-business men, and we are killing the opportunity of many of our younger people to enter small business.

C. *It is immoral to give away patent monopolies on Government-financed inventions.*

There is no ethical and moral justification for the Government to give away the resource of scientific knowledge as well as property rights to it.

The granting of patent privileges is justified only insofar as it serves as an incentive to take risks. The hope of securing monopoly profits is supposed to be the inducement for inventors to exert their inventive efforts or for corporations to risk their money on uncertainties connected with expensive development and the building-up of markets.

But where are the risks in Government-financed research and development contracts? There really are none. Practically all R & D contracts let by federal departments and agencies are on a cost-plus basis. No matter how expensive a project turns out to be, costs are covered by the Government. Moreover, there is no risk in finding a market for the new product. The market is there, waiting eagerly, in the form of the Federal department or agency for whom the research and development has been performed. The whole thing is virtually a riskless venture for the contractor. Even the possibility of contract cancellation cannot be considered a risk, for the firms have invested none of their own funds and are generally granted, in addition, a return well in excess of costs.

The whole "incentive" argument is therefore untenable. If there are no risks, there is no justification for a monopoly profit resulting from a patent.

The effects of Department of Defense policies were clearly revealed by the testimony of two small business witnesses before our Committee. A large company developed a camera for the U. S. Government with public funds. A small dynamic company through competitive bidding won the right to produce a quantity of these cameras for the Government. Because the original developer had title to the cameras and parts, the small company had extreme difficulty in getting the necessary information to build it, even though the Government had paid the development costs. But this is not all. The large company wanted a 7½% royalty from the small company on each camera made by it. The result was that the latter would have had to start off at a 7½% cost disadvantage from the very beginning.

The other case was that of the small-business man whose company overhauls and repairs instruments in aircraft. By giving the equipment manufacturers exclusive rights to Government-sponsored developments, the Government has undermined the ability of any other company to compete for the overhaul of aircraft instruments, For, by forcing the Government to disqualify all bidders other than the original manufacturer, owing to the inability of the other companies to obtain the necessary repair parts, components, or test equipment from the sole source of supply, the original company can name its own price and conditions.

Big firms have many tremendous advantages over small firms. They have the power that goes hand in hand with size; they are supposed to have the manufacturing know-how. It is not fitting for the United States Government to add to the already great power of the huge giants to the detriment of their smaller competitors.

Let me take a specific example of a major defense contractor recently examined by the General Accounting Office.[30]

The contractor's employees, as a condition of employment, were required to assign to the contractor any invention, developments, and discoveries made or conceived during the period of their employment.

In accordance with the Armed Services Procurement Regulations, the contractor obtained the patent rights, with the Government receiving a nonexclusive, royalty-free license.

As of June 30, 1959, this contractor had filed applications for 95 patents. Out of this number, 11 applications were for inventions which the *contractor himself* characterized as "primary" inventions, that is, "developments believed to be sufficiently basic and important to provide a basis for a *new industry* or an entirely *new product line;* or one which may have a *major* effect on the expansion or conversion of an existing industry or product line."

The inevitable conclusion is that the United States Government has spent public funds to give one private company the power to control whole industries — to exclude everyone it wants to exclude; to charge any price it wants to charge.

Incredible as it sounds, several agencies have provisions in their research and development contracts which can prevent the Government from using the

[30] Statement of Robert F. Keller, General Counsel, U. S. General Accounting Office, before the subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary, U. S. Senate, May 17, 1960, pp. 5-31.

as quickly as possible within firms. In addition, the fruits of research of one firm are often external economies to other firms allowing them to become more efficient, to adopt new processes and techniques, to open up new scientific, industrial, or commercial possibilities. To the extent that the results of research do not flow rapidly throughout our society, the public is deprived of one of the chief benefits of the research it is sponsoring. It is only through a policy similar to that of the AEC that the most rapid dissemination of all discoveries could be insured. There is no incentive to keep them secret.

The AEC has taken aggressive and effective action in the development of an information-processing system, which distributes technical information in the broadest and most expeditious manner.[25]

On the contrary, under the policy of the Department of Defense—

> . . . the know-how which is paid for by the taxpayer and which should be public domain for the benefit of everyone and under the Government's control, is actually controlled by the contractor.
>
> It is thus difficult for the Government to know what has been developed at its expense and to make the know-how available in connection with later contracts.[26]

This kind of an attitude is perfectly reasonable for a private concern desiring to maintain or increase its market position. But here is a very clear case where the interest of society as a whole or even industry as a whole is in conflict with the interests of particular firms. Since Government-sponsored research is in trail-blazing fields like atomic energy and space, this conflict is even greater.

> A telling example of productivity increase that can, in the long run, be brought by absolutely free access to a steady flow of advanced technical ideas is offered by American agriculture. Traditionally, the bulk of agricultural research in this country was financed by Federal funds, and its results were put at the disposal of the potential users free of charge. In consequence, agricultural productivity has been increasing by leaps and bounds, finally even creating a glut of cotton and wheat.[27]

Here is what the senior editor of BUSINESS WEEK writes about transistors.

> When the semiconductor industry began its growing, Bell Labs held basic design and process patents covering the entire field. *The growth gained tremendous impetus from Bell's policy of putting these virtually in the public domain.*[28] (Emphasis added.)

B. *A free economy will be encouraged and safeguarded by increasing competition.*

Competition brings about lower prices and provides the greatest opportunities for those who have the most to offer. Monopoly, on the other hand, implies the power to limit production and to restrict entry into industries and occupations. It enables the possessor of this power to levy tribute upon the whole community and denies some of our citizens the opportunity of making

[25] Committee on Government Operations, U. S. Senate: *Documentation, Indexing, and Retrieval of Scientific Information,* Senate Doc. 113, 86th Cong., pp. 15 and 45.

[26] Report of the Subcommittee on Defense Procurement to the Joint Economic Committee, *Economic Aspects of Military Procurement and Supply,* p. 26.

[27] Silk, *supra,* p. 7.

[28] Silk, *supra,* p. 75.

doing Government research, developmental and related work would get the right to their employees' inventions if the Government did not. It is inconceivable that it would make any difference to the inventor, who actually does the inventing, whether this invention becomes the property of his employer or of the Government. This is especially true of inventors who realize that in any event the Government—not the company—is the ultimate employer.

IV. Reasons Why Government Should Take Title

If our Nation desires to attain the objectives of growth, efficiency, free competitive enterprise and social justice previously mentioned, the Government must stop giving away to private firms patent monopolies resulting from Government-financed inventions.

A. *The rate of scientific and economic growth will be accelerated.*

The reason rests on the fundamental fact that the diffusion of scientific knowledge throughout our society is a prerequisite for scientific and economic progress and a rise in general productivity. The American Society of Mechanical Engineers became so alarmed at the delays in the dissemination of scientific knowledge that they started a major study of the problem.[19]

The present policies of the Department of Defense are serious impediments to the creation and dissemination of new knowledge. These policies are retarding the rate of our scientific advance and are undermining the very security of our country. This is due to two reasons.

First, by giving away all commercial rights to Government-financed inventions, the Government itself is offering commercial incentives for putting more resources into applied scientific research as against basic scientific research. More resources will be used to adapting to the civilian market a device originally designed for Government use, instead of pushing outward the frontiers of knowledge through basic research. This is certainly in conflict with the Government policy to encourage basic scientific research to discover new scientific principles.

Second—and this is a crucial point—the policy of giving away to private firms the patent rights to Government-financed inventions and discoveries tends to erect walls between scientists and to prevent a free interchange of information. As a great biologist has stated:

> Two minds may strike from each other sparks which neither would have generated separately. Not infrequently, two pieces of knowledge and two different outlooks, coming from different minds, fit together like pieces of a jig-saw puzzle, and provide the answer or the clue to a long-standing problem.[20]

Each new invention multiplies the possible combinations of existing ideas, thereby widening the scope for originality. Many imperfect ideas and inventions are always lying dormant, lacking only some element which can bring them to life. One example of this phenomenon is the modern jet engine which is a combination of jet propulsion and the gas turbine. If, for example, a metal

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[19] *Lag in Applying Science Decried,* New York Times, September 10, 1959.

[20] A. S. Parkes: *The Art of Scientific Discovery,* Midway, Vol. I, #3, p. 71.

tainly does show up in the cost of the lower rate of diffusion of inventions and the higher prices associated with exclusive commercial rights, thus restricting the practical application of many of the path-making discoveries of recent years.

> In an era in which economic progress depends so much on scientific research, such chronic underemployment of technical knowledge might have, in the long run, an even more deleterious effect on the rate of economic growth than idle capital or unemployed labor.[14]

These are real costs.

Another real cost to society is described by one of the witnesses before the Monopoly Subcommittee of the Senate Small Business Committee.

> It must also be remembered that the granting of patent rights involves a wastage of whatever resources competitors use to 'invent around' the patent in order to enable them to compete with the patentee in the same market. Too, it is not uncommon for patentees to devote considerable resources to the quest for patentable alternative solutions, even inferior ones, in the hope of 'fencing in' the original patent.[15]

It hardly becomes a national Government interested in promoting progress and growth to aid and abet in these resource-wasting activities by granting patent rights to firms performing research for it, especially when nothing is obtained that might offset these drawbacks.

It is easy to understand why patent lawyers equate "inventing around" with progress and growth. For them it means more private patents and greater value for existing patents, which in turn means more business for them. From a national point of view, however, public investments which encourage such activities represent waste in Government.

Dr. Dowling, before Senator Kefauver's Antitrust and Monopoly Subcommittee, was critical of the "wasteful" nature of the competition in the pharmaceutical industry. "Under the present system," he said, "a successful pharmaceutical company works at a frenetic pace to produce slight modifications of existing drugs in order to keep abreast of its competitors." [16]

In view of the scarcity of imaginative scientists and the abundance of unsolved problems, how can we justify—from a national point of view—the use of scarce resources for seeking alternative solutions to problems which have already been satisfactorily solved?

When so many inventions and discoveries which could be of great benefit to our people—to all people—are waiting to be made, how can we justify the assignment of a research force to search for inventions that are not intended for use at all—but merely to erect barriers to possible competition? This is especially unjustified when the public is paying for wasted effort, the only purpose of which is to make the public pay a still higher price for something that the public has already paid for twice—first for the cost of the discovery, second for maintaining the private patent monopoly.

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[14] Leonard S. Silk: *The Research Revolution,* McGraw-Hill Co. 1960, p. 8.

[15] *Hearings, supra* note 13, pp. 20-21.

[16] Subcommittee on Antitrust and Monopoly, Committee on Judiciary: *Administered Prices in Drug Industry,* Part 24, 86th Cong., 2d Sess., 1960, pp. 14167-14182 (Hearings Sept. 7, 8, 9, 12, 13, 14, 1960)

3. The contention that the rate of increase in productivity and national output would be retarded if the Government takes title to inventions it has financed is actually a conclusion dependent on the validity of the previous two arguments, which are its necessary conditions. Since these two arguments are untenable, the conclusion is invalid. In fact, the contention of this essay is that if the Government takes title, and adopts an affirmative, imaginative policy the effect will be just the opposite. The rate of growth of our national output and of our scientific achievement would actually be accelerated.

4. One of the arguments most frequently advanced is that if exclusive commercial rights are not given to the contractor, the cost of the contract to the Government would increase and some firms would be reluctant to take the contracts.

Whether the cost of R & D contracts would increase is difficult to say. The Atomic Energy Commission does not pay any more for comparable R & D than the Department of Defense, even though the patent policies differ. Many firms would not exist without the Government contracts, (the Aerojet General Corporation, for example, exists almost wholly on Government contracts) and such firms are unable to demand a higher price.

For the Government to pay more than necessary is in fact the equivalent of a subsidy. The firms which devote a small part to Government work would be in a better position to demand higher prices but will not necessarily get it if we can introduce greater competition in the field of research. In addition, the value of Government R & D to industry is extremely great. Some companies derive a breadth and depth of technical knowledge that they could not be able to achieve solely from commercial R & D. It permits the maintenance of a large, well-rounded scientific and engineering staff.

Government R & D is extremely valuable to the health, prosperity and perhaps even the existence of numerous firms. Government-financed R & D frequently subsidizes and augments their own R & D efforts. Business firms are not unaware of this, for they are constantly urging such agencies as the AEC to give them such work.

A few statements by businessmen themselves reveal the value of Government R & D contracts in their commercial work:

(1) Mr. A. E. Raymond, senior vice president of the Douglas Aircraft Company, Inc., says: "Military experience in operation and design is very useful commercially because the military is pushing for performance primarily rather than safety. They try out new developments first, so commercial planes always derive some benefits from military designs."

Mr. Raymond was unable to estimate the amount his company saved through military-sponsored research in developing the DC-8, but stated that: "If we hadn't had the military experience, we couldn't have built it at all." [8]

(2) A Raytheon Manufacturing official stated: "We always benefit from military R & D inasmuch as it permits us to maintain a large well-rounded scientific and engineering staff. From their research efforts, we derive a breadth and depth of technical knowledge that we would not be able to achieve solely from commercial R & D." [9]

[8] *Wall Street Journal*, June 10, 1959, and reprinted in *Congressional Record Appendix*, June 19, 1959, pp. A5307-9.

[9] *Ibid.*

These are the standard arguments which the so-called "license theory" proponents indiscriminately advance, but which are palpably contrary to reality. Let us examine them carefully.

II. Analysis of Arguments

1. The claim that civilian products would not be produced without the protection of a patent monopoly is not true. An examination of the structure of our economy shows that those commodities and services which make up the largest part of our gross national product lie outside the patent field.

Products and markets are constantly developed in fields where there is no patent protection. The required outlays are made partly because producers must keep up with their innovating competitors if they want to stay in business, because they believe that the natural headstart which their own innovation gives them over their competitors will allow them to recover the expenses of developing the products and markets. If there is a demand for a product, businessmen will produce it--patent or no patent.

The absence of a monopoly position has not discouraged the entry of firms into color film processing. As a result of the Eastman Kodak judgment which opened up the field of color film processing, many new firms have been established. Prior to the consent judgment only one firm, Eastman Kodak, processed color film. There are now over two-hundred firms, mostly small businesses, competing against each other as well as offering strong competition to Eastman.

The manufacture of block-making machinery is another relevant example. Within four years after the entry of an antitrust judgment in the case of the United States v. Besser Manufacturing Company et al., a total of 13 companies undeterred by a lack of patent protection were issued licenses for the manufacture of this machinery. The price fell from the prejudgment price of $53,000 per machine to $32,000, a 40% decrease in price.

Consider the result of the consent judgment of January 1956 withdrawing patent protection from IBM.[2] Many companies, both large and small, availed themselves of the rights granted under the provisions of the judgment. Today numerous small firms are manufacturing tabulating cards and at least two firms are manufacturing presses on which such cards are made. Even IBM's profits for the first six weeks of 1959 were up 27 percent over the first half of the preceding year, and this is because of the rapid expansion of new markets for the machines developed by IBM and its competitors.

In addition, competition in this industry, created in part by the consent judgment, has forced down prices. In short, the public, the new competitors, as well as IBM itself, have benefited from the newly created competitors in this industry.[3]

2. The argument that putting an invention into the public domain will automatically discourage investment in and exploitation of publicly owned in-

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[2] Address by Robert Bicks, Assistant Attorney General, Antitrust Division, Department of Justice, before the Patent Law Section of the American Bar Association, Miami Beach, Florida, August 26, 1959.

[3] *Ibid.*

policy body of some sort.[1] Running through these articles appears to be a common thread of recognition that perhaps no single agency, with its narrow functions, can be expected to have a sufficiently broad view of the overall national interest.

Another area, to some extent common to all the articles, is recognition of the need for flexibility in some degree. There are no *absolute* positions, or, to put it otherwise, each statement of position recognizes the need for *variations or exceptions*. The Government *title* proponents recognize the possibility of equities which might require departure from that view and the *license* proponents recognize overriding national interest considerations dictating the need for Government ownership or other public interest protection techniques.

All articles recognize the possibility of *improvement in the present state of things* as regards Government contract patent policy.

A NOTE OF CAUTION

The references in this introduction to the various articles in this Symposium are intended solely as an invitation to examine those articles more closely, and the reader may well disagree with the oversimplified characterizations which these references may suggest.

EDITOR'S POSTSCRIPT

Of interest to the readers of this Symposium are several patent policy items in the Congressional Record which were published subsequent to and therefore not cited in these articles.[2]

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[1] See S.1176, March 2, 1961, introduced by Senator Long, which would establish a "Federal Inventions Administration".

[2] "Inventions and Patent Protection" by Dr. Selma A. Waksman (Ext. of remarks of Cong. John V. Lindsay) 107 Cong. Rec. A701 (Feb. 2, 1961); "Patent Changes by Department of Defense" (Ext. of remarks of Cong. Overton Brooks) 107 Cong. Rec. A934 (Feb. 16, 1961); "Address on Government Patent Policies by Congressman Bernard F. Sisk" (Ext. of remarks of Cong. Joseph E. Karth) 107 Cong. Rec. A935 (Feb. 16, 1961); "Government Patent Policy" (Ext. of remarks of Cong. David S. King) by Congressman Emilio Q. Daddario, 107 Cong. Rec. A1129 (Feb. 21, 1961).

INTRODUCTION

GOVERNMENT CONTRACT PATENT POLICY—POTPOURRI

Paul A. Barron *
and
Paul G. Dembling **

THE ISSUE

The gist of the problem to which this Symposium is directed is whether, in the public interest, title to patented inventions arising from Government-financed work, especially research and development, should be acquired by the Government or retained by the contractor subject to a royalty-free nonexclusive, irrevocable license to the Government.

SYMPOSIUM PARTICIPANTS AND SUBJECTS

Because the issue is the subject of Congressional scrutiny and interest, the views of two Legislators are expressed. *Senator Russell B. Long's* article is a strong, well-documented and thought-provoking endorsement of the Government title policy, while *Congressman Overton Brooks* gives general endorsement to the Government license policy, marshalling persuasive, practical and historical arguments for this view.

NASA's General Counsel, *John A. Johnson* explains NASA's policies and procedures developed for the administration of the "property rights in inventions" provisions of the "Space Act". He points out that NASA has adopted policies based on the principle that the private party acquiring patent rights in inventions from Government-financed work, should be required to prove that it is seeking to exploit the invention within a reasonable time, failing which, rights to the invention should vest in the Government.

Graeme C. Bannerman, R. Tenney Johnson, and Howard C. H. Williamson, all of the Department of Defense, reflect that Department's experience in administration of the license view, giving recognition, however, to that Department's recent change of policy providing for high-level consideration for taking title, under appropriate circumstances.

Roland A. Anderson, of the Atomic Energy Commission, in his well documented article, describes the Atomic Energy Commission's experience in the administration of its primarily Government title policy.

Ross D. Davis and Eugene J. Davidson of SBA, express concern lest the public interest be viewed too narrowly through the eyes of each agency focused exclusively on the agency's primary function. Their consideration of the Justice Department's concern over economic concentration and SBA's solicitude for the interests of small business lead them in the direction of the Government title view, recognizing, however, the dangers of an inflexible fix on either extreme.

The *Parke M. Banta and Manuel B. Hiller* article emphasizes the fundamental purpose of the Department of Health, Education and Welfare research support program as being the direct public benefit rather than any more limited

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