

THE EFFECTS OF PATENT HARMONIZATION ON INVENTORS

by

Lily Lim

Bachelor of Science in Aeronautical and Astronautical Engineering
University of Illinois, 1992

Submitted to the Department of Mechanical Engineering in Partial Fulfillment of the Requirements
for the Degree of

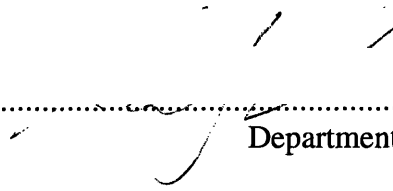
MASTER OF SCIENCE

at the Massachusetts Institute of Technology
May 1994

©1994 Lily Lim. All rights reserved.

The author hereby grants to MIT permission to reproduce and to distribute publicly paper and
electronic copies of this thesis document in whole or in part.

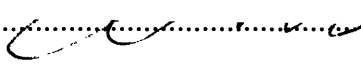
Signature of Author.....


Department of Mechanical Engineering
May 6, 1994

Certified by.....

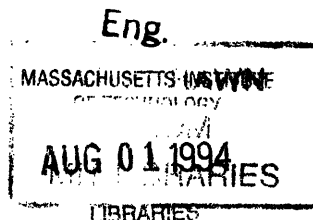
Robert H. Rines, Lecturer
Department of Electrical Engineering
and Computer Science
Thesis Supervisor

Certified by.....


Alexander H. Slocum
Associate Professor of Mechanical Engineering
Departmental Reader

Accepted by.....

Ain. A. Sonin, Departmental Graduate Officer



THE EFFECTS OF PATENT HARMONIZATION ON INVENTORS

by

LILY LIM

Submitted to the Department of Mechanical Engineering on May 6, 1994 in partial fulfillment of the requirements for the Degree of Master of Science

ABSTRACT

In 1993 and 1994 a survey of the views of inventors in the United States America was conducted. Even though the U.S. has been involved for decades in negotiations to harmonize the U.S. patent system with those of other industrialized nations of the world, never before had the opinions of inventors about the patent harmonization proposals been gathered and published. The survey was sent out to inventors who were in fields of technology that ranged from toys to spacecraft and who were in businesses that varied in size from one person start-ups to hundreds of thousands of employees strong multi-national corporations. Questions on such patent harmonization topics as first-to-file, prior-user rights, 18 month publication, a modified one year grace period, a 20 year patent term, and provisional patent applications were included in the survey. In addition, questions concerning current U.S. patent system problems and issues such as interference proceedings, patent application processing time, filing fees, quality of patent examiners, access to patent information, and continuation and continuation-in-part applications were also included.

Analysis of the answers from the 144 survey forms returned indicates that inventors overwhelmingly do not support the patent harmonization package supported by groups such as associations of large businesses and an association of large businesses patent attorneys in the U.S. A large majority of the inventors surveyed indicated that they did not favor changing the U.S. patent system from a priority granting system operating on a first-to-invent principle to a system operating on a first-to-file principle. Regarding other harmonization issues including 18 month publication of patent applications and a 20 year patent term, inventors were not as strongly against the proposals as with the first-to-file issue, but were not strongly in favor of the changes either.

Results from the survey were compared to those from a survey of businesses, not inventors, conducted a few years ago by the Small Business Administration. The comparison showed that businesses with 50 or less employees and inventors shared similar opinions about the harmonization proposals.

Thesis Supervisor: Dr. Robert H. Rines
Title: Lecturer,
Department of Electrical Engineering and Computer Science

ACKNOWLEDGMENTS

I would like to express my thanks to the following people for their help and support in the writing of this thesis:

Robert Rines: an amazing and charming man whose talent and vision always inspires me.

Alex Slocum: an energetic and enthusiastic genius of invention who is always ready to lend a hand or give some advice even though his schedule is always packed.

6.901 Inventions and Patents, Fall 1993 Class: an enthusiastic class that helped put the survey on its feet. Special thanks to Jason Solinsky, Cherng Chao, and Justin Liu for going above and beyond the call of duty in obtaining information from the Small Business Administration and the technology and licensing offices of M.I.T. and Stanford. Special thanks also to the group leaders who were instrumental in organizing the survey: Dominic J. Sartorio, Chad Barry, Marcie Black, Teresa Chang, and Kip Compton.

6.931 Development of Inventions and Creative Ideas, Spring 1994 Class: a class full of students with bright minds and bright ideas who were wonderful in their generosity and dedication to the survey project. Special thanks again to the group leaders: Kley Achterhof, Rob Fowler, and Astrid Richter.

Rochelle Ferber, Franklin Pierce Law Center (PTC Research Foundation): a wonderfully gracious person who was instrumental in the development of the questionnaire form.

William Schreirer, Small Business Administration Office of Advocacy: for his assistance with assembling the raw data from the SBA survey.

Academy of Applied Science.

M.I.T. Library Personnel: all my dealings with them were pleasant and helpful.

David Gary Lawrence: for his friendship and support in my thesis efforts.

Peter Roesset: the person who has been my closest friend for the past five years, hopefully, will continue to be my best buddy for a long time yet to come.

David Pratt: the "Mommy" to all the quirky people that he deigns to associate with.

Gary Tarnowski: without whom there would be no Garyland.

爸爸: last in this list, but not in my heart. A father that has always inspired me in my adventures in education and in my life.

This material is based upon work supported under a National Science Foundation Graduate Research Fellowship. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of the National Science Foundation.

In addition, support from a M.I.T. Starr Foundation Fellowship to supplement the National Science Foundation Graduate Research Fellowship in the 1992-1993 school year was greatly appreciated.

TABLE OF CONTENTS

ABSTRACT	3
ACKNOWLEDGMENTS.....	5
LIST OF TABLES.....	10
LIST OF ILLUSTRATIONS	11
INTRODUCTION	17
CHAPTER 1. The Importance of Patents to Small Businesses and the Economy	19
CHAPTER 2. The Current United States Patent System.....	25
CHAPTER 3. Current Patent Harmonization Proposals.....	31
3.1 First-To-File	33
3.2 Prior User Rights	38
3.3 18 Month Publication	41
3.4 New Type of Grace Period	43
3.5 20 Year Patent Term Starting at Filing Date	46
3.6 Proposed Harmonization System vs. Current Systems	47
CHAPTER 4. Patent Filing Characteristics of the Top Three Patenting Countries.....	49
CHAPTER 5. Results of the Survey of Independent Inventors and Inventors in Small and Large Businesses in the United States.....	53
5.1 Organization	54
5.2 General Demographics	56
5.3 First-To-File vs. First-To-Invent	59
5.4 Prior User Rights.....	62
5.5 18 Month Publication	64
5.6 New Type of Grace Period	66
5.7 20 Year Patent Term	68

5.8 Provisional Patent Applications	69
5.9 Current Problems with the U.S. Patent System	71
5.9.1 Interference Proceedings.....	71
5.9.2 Patent Application Processing Time.....	75
5.9.3 Filing Fees	77
5.9.4 Quality of Patent Examiners.....	78
5.9.5 Access to Patent Information.....	78
5.9.6 Continuation and Continuation-In-Part Applications.....	79
5.10 Conclusions.....	81
CHAPTER 6. Comparing the Results of the Survey of Inventors to the Results of the Small Business Administration's Survey of Small Businesses.....	85
6.1 Demographics.....	86
6.2 First-To-File	87
6.3 18 Month Publication.....	88
6.4 20 Year Patent Term.....	89
6.5 Provisional Patents	90
6.6 Patent Application Processing Time	91
6.7 Conclusions	92
CHAPTER 7. Conclusions and Recommendations	93
APPENDIX A: Survey Form Used in 1993.....	97
APPENDIX B: Survey Form Used in 1994.....	102
APPENDIX C: Comments of Respondents in Issues Covered in the Survey	107

LIST OF TABLES

Table	Page
Table 1. Differences between the Draft Treaty and the current U.S., European, and Japanese Patent Systems.....	48
Table 2. Patent applications filed in the top 3 filing countries in 1988.	50
Table 3. Patent applications granted in the top 3 granting countries in 1988. ...	50
Table 4. Top 3 countries filing the most non-resident patent applications in the United States, Fed. Rep. of Germany, and Japan in 1988.	51
Table 5. Top 3 countries receiving patent grants from the United States, Fed. Rep. of Germany and Japan in 1988.....	51
Table 6. Areas inventors were working in.....	57
Table 7. Patenting characteristics of the businesses with which inventors were associated	58
Table 8. Number of inventors who used patents to start up a business.....	58
Table 9. Responses to the question: "What percentage of the patents filed in the last 10 years have been: commercialized by your company, involved in a joint venture, assigned to another company, licensed, or not used?"	59
Table 10. Demographics of the M.I.T. and SBA surveys.	86
Table 11. Breakdown of M.I.T. and SBA respondents by field.	87

LIST OF ILLUSTRATIONS

Figure	Page
Figure 1. Responses to the question: "Are you familiar with the current patent laws?"	60
Figure 2. Responses to the question: "Are you familiar with the proposal to change the patent laws?"	60
Figure 3. Responses to the question: "Which system do you prefer: Current or Proposed Harmonization Bill?"	61
Figure 4. Responses to the question: "Would you or your organization change your patenting practices and policies if the U.S. were to adopt a first-to-file patent system?"	62
Figure 5. Responses to the question: "How serious of an effect would prior user rights have on your willingness to apply for patent protection?"	63
Figure 6. Responses to the question: "How serious of an effect would prior user rights have on your willingness to maintain trade secrets?"	63
Figure 7. Responses to the question: "How serious of an effect would prior user rights have on your ability to raise capital for R&D or a business start-up?"	63
Figure 8. Responses to the question: "How important is the exclusivity of a patent to your operation?"	64
Figure 9. Responses to the question: "Would you or your organization change patenting practices and policies if prior user rights were available under the proposed law?"	64

Figure 10. Responses to the question: "Would publication of pending applications 18 months from their filing dates seriously affect your business?".....	65
Figure 11. Responses to the question: "Would you or your organization change patenting practices and policies based on the knowledge that your application, if still pending, would be published 18 months after it is filed in the U.S.?"	65
Figure 12. Responses to the question: "Do you or your organization tend to file patent applications before any disclosure (publication, marketing, testing)?"	66
Figure 13. Responses to the question: "Have you or has your organization taken advantage of the current one year grace period?"	67
Figure 14. Responses to the question: "If the proposed 'grace period' were adopted in place of the current law, what kind of impact would that have on you or your business?"	67
Figure 15. Responses to the question: "Would you or your organization change patenting practices and policies if the proposed change to the grace period were enacted?"	68
Figure 16. Responses to the question: "Which patent term would you prefer: Current 17 year or Proposed 20 year?"	68
Figure 17. Responses to the question: "Do you or does your organization use an attorney to prepare your patent applications?"	70
Figure 18. Responses to the question: "Could you write an adequate description of your invention for obtaining patent protection without the aid of an attorney?"	70

Figure 19. Responses to the question: "Would the provisional patent application be useful to you or your business?"	70
Figure 20. Responses to the question: "Would you or your organization change patenting practices and policies if provisional patent applications were available?"	71
Figure 21. Responses to the question: "Have you ever been involved in an interference?"	72
Figure 22. Responses to the question: "How serious of a problem do you consider the current interference practice to be?"	73
Figure 23. Responses to the question: "What are your concerns about interference proceedings: Expense, Time, Complexity of Proceeding, or Other?"	73
Figure 24. Responses to the question: "Do you believe interference proceedings enhance the protection available to you or your organization's inventions?"	73
Figure 25. Responses to the question: "Would you or your organization change patenting practices and policies if first-to-file were adopted and interference proceedings were not available?"	74
Figure 26. Responses to the question: "Do interference proceedings need to be improved?"	74
Figure 27. Responses to the question: "Would filing affidavits instead of following full legal disclosure procedures help the interference proceedings?"	75
Figure 28. Responses to the question: "Would elimination of interference proceedings be a good reason to change over to the first-to-file system?"	75

Figure 29. Responses to the question: "Does the application processing time for patents need to be improved?"	76
Figure 30. Responses to the question: "What would you consider a good processing time for patent applications?"	76
Figure 31. Responses to the question: "Is the development of a electronic patent search database a worthy expenditure for the Patent Office?"	76
Figure 32. Responses to the question: "Are U.S. filing fees too high now?"	77
Figure 33. Responses to the question: "How does the cost of filing patents in the U.S. compare to the cost of filing patents in Europe?"	77
Figure 34. Responses to the question: "How does the cost of filing patents in the U.S. compare to the cost of filing patents in Japan?"	78
Figure 35. Responses to the question: "Is the quality of U.S. patent examiners in need of improvement?"	78
Figure 36. Responses to the question: "Is access to patent information in need of improvement?"	79
Figure 37. Responses to the question: "Would having public free or low cost access to all of the U.S. Patent Office text information improve the system?"	79
Figure 38. Responses to the question: "Have you used continuation or continuation-in-part applications?"	80
Figure 39. Responses to the question: "Are continuation and continuation-in-part applications useful?"	81
Figure 40. Responses to questions concerning first-to-file in the MIT and SBA surveys.....	88

Figure 41. Responses to questions concerning publication of patent applications in the M.I.T. and SBA surveys.....	89
Figure 42. Responses to questions concerning length of patent terms in the M.I.T. and SBA surveys.....	90
Figure 43. Responses to questions concerning usage of patent counsel in the M.I.T. and SBA surveys.....	91
Figure 44. Responses to questions concerning patent application processing time in the M.I.T. and SBA surveys.	91

INTRODUCTION

In April of 1992, the Patent System Harmonization Act was introduced in both the House and the Senate of the United States Congress. It was the first of several recent bills introduced that called for conforming the United States patent system with those of other nations of the world. If approved, it would change many of the practices of the U.S. government's two century old patent practice. Although the international harmonization of patent systems should be a long term goal for nations active in the global economy, the current harmonization proposal package has too many drawbacks and not enough benefits for inventors in the United States to warrant its adoption. The U.S. patent system is one that has worked well and continues to work well for American society and economy. Any change to it should be made for its improvement, rather than just altering the well working system to make it more similar to those in Europe and Japan. Consideration for the social, economic, and cultural differences of all nations, including the United States, have to be made in order to achieve true harmonization of patent systems. Nations of the world should strive towards the goal of having a global patent system that would allow for consistency of regulations and fast application processing times. However, the result of adopting the current harmonization proposal package would certainly not be such a system.

This thesis discusses the effects that the Patent Harmonization Act of 1992 and related WIPO patent harmonization proposals could have on inventors in all sizes of businesses from small start-up companies to large multi-national corporations. In recent discussions for harmonization on Capital Hill and also in Geneva, inventors

have not been represented. This is due in part to the lack of politically active organizations of inventors. However, inventors will be the people most directly affected by changes in the patent laws, and therefore need to have their opinions made known. Otherwise, their views will continue to not be represented in the deliberations over patent harmonization.

Over a thousand questionnaire forms that asked for responses to questions concerning patent law harmonization proposals were sent to inventors and companies throughout the United States. 129 inventors and 15 business administrators responded to the survey.

In this thesis, a detailed discussion of the patent law harmonization proposals is followed by an analysis of the results of the survey. The survey topics include the basic harmonization proposals for adopting a first-to-file priority awarding system, prior user rights, an 18 month publication of patent application, a modified one year grace period, a 20 year patent term, and provisional patent applications. In addition, survey results about current U.S. patent system problems and issues such as interference proceedings, patent application processing time, filing fees, quality of patent examiners, access to patent information, and continuation and continuation-in-part applications are tabulated and analyzed. The survey results are also compared to results from similar questions from an independent survey commissioned by the Small Business Administration.

CHAPTER 1

The Importance of Patents to Small Businesses and the Economy

Even back when that the United States of America was being founded, the natural rights of inventors were considered key to the development of industry in the nation. The rights were deemed to be of such importance to national interests that the founding fathers stipulated in the Constitution that the government would play an active role in securing rights to inventors. Article I, Section VIII of the Constitution gives Congress the power to protect inventors:

The 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.

Out of this clause came the right for Congress to build a system for protecting intellectual property. Several different kinds of intellectual property protection, including copyrights, patents, trademarks, and trade secrets, are currently employed in the U.S. In this paper, only patents are discussed because they are the only form of intellectual property protection with a direct effect on innovation that is under the threat of being drastically changed.

The method implemented by the U.S. and all other industrialized nations in the world to secure the rights of inventors is the patent. In securing rights to inventors, patents are intended to help induce and disperse innovation. In the current U.S. patent system, a temporary "monopoly" is granted to patent holders in exchange for total disclosure of information necessary for the production or implementation of the newly developed items or processes. When a patent is issued to an inventor, the owner of

the patent, in return for publicly disclosing the invention and its best mode of operation, has the right to exclude others from making, using, or selling the invention for 17 years.¹ Thus, the inventor is given a limited amount of time to bring the product or innovation into the market. If successful, he or she might not just reap a financial reward that would cover the costs of developing the invention, but might be the founder of a business that will spawn into a large corporation. In summary, the granting of limited protection to inventors in the form of patents is the incentive that the U.S. government gives to encourage innovative developments and their speedy dissemination. In return for granting a limited "monopoly" to a person for his innovation, the nation receives the benefits of increased job creation and spurred economic growth.

Over the past decades, the driving force in the creation of new jobs in the U.S. has been small businesses, not large corporations. Some 57.2 percent of all net new jobs created between 1976 and 1986 were in firms with fewer than 500 employees, 43.7 percent were created by firms with fewer than 100 employees, and 26.2 percent were created by firms with fewer than 20 employees. In the more recent past, between 1987 and 1991, while companies with more than 5000 workers decreased their positions by 2.4 million workers, businesses with less than 20 workers increased their work force by 4.4 million people.² Clearly, small businesses are now the fuel that feeds the growth of the economy. Currently, two out of every three new jobs in the United States are created by small and medium-sized businesses. Small firms employ the majority of American workers, and small firms make up a large majority

¹Title 35 United States Code (35 U.S.C.) Section 154:

"Every patent shall contain...a grant to the patentee...for the term of seventeen years... the right to exclude others from making, using or selling the invention throughout the United States...."

²Koretz, Gene, "Economic Trends: Tiny Employers Weigh Some Big Hiring Plans," Business Week 21 June 1993: 24.

of American businesses. In the U.S., 93.3 percent of all business establishments employ fewer than 100 employees, and 83.4 percent employ fewer than 20 employees. Only 3.4 percent of all firms employ 500 or more employees, and only 1.5 percent of all firms employ 5,000 or more employees.³ Clearly, small businesses, not large corporations are the engines of growth in the current economy.

Small businesses, surely, are driving the economy, but what drives small business growth? Recently, economists have been explaining growth using technology levels. In fact, technology is now considered as important a factor in economic growth as labor and capital. Economists now use patent filing data along with capital and labor in their growth models.⁴ Technology is in the forefront of theoretical and empirical studies of economic growth, and its connection to growth has become more apparent. According to some models, if a country has a high level of innovative activity, it will have a high share of "new" goods in output and an extensive use of "new" techniques in production. Since "new" goods command high prices and "new" techniques imply high productivity, it follows that countries with a comparatively higher level of innovative activity also tend to have a higher Gross Domestic Product per capita than other countries.⁵ In other words, if a nation has a higher level of patenting activity, it will be in a more robust economic situation.

In addition to playing an important economic role, technology has emerged as one of the more important factors in explaining international trade flows and even corporate strength. Recently, technology induced trade has been better explained as a semi-permanent disequilibrium. Thus, countries that are further ahead in technology

³"Republican Regulatory Relay," Congressional Record 29 Apr. 1993, daily ed.: H2173-2178.

⁴Fagerberg, Jan, "A technology gap approach to why growth rates differ," Research Policy 16 (1987): 87-99.

⁵ibid.

tend to stay further ahead in the area.⁶ In other economic studies, it was found that patent data is even an excellent indicator of overall corporate technological strength.⁷ Summarizing the economic viewpoint, increased patenting activity is a sign of economic robustness and growth.

The U.S. is currently a very strong patenting country with over 13 billion dollars in trade surplus for intellectual property trade⁸ and should stay technically and innovatively ahead of countries that don't tend to patent as much, so long as the inventive community in the nation remains healthy. Since patenting is so closely tied with innovation and growth, if patents become more difficult to attain, then there could potentially be a detrimental effect on the growth of the U.S. economy.

Thus, it is very important for the U.S. to maintain a robust patent system that will be beneficial to all sectors of businesses. Especially important is to keep access to patenting easy for small businesses, the great contributor to job creation. Small businesses and the inventors in small businesses, need to be protected from being hampered by changes in regulations that would mainly benefit large businesses. However, the Basic Proposal for Patent Harmonization⁹, negotiated by the World Intellectual Property Organization and the corresponding Patent Harmonization Act proposal which was recently introduced in Congress¹⁰, do not heed the interests of

⁶Soete, Luc, "The impact of technological innovation on international trade patterns: The evidence reconsidered," Research Policy 16 (1987) : 101-130.

⁷Narin, Francis and Elliot Noma, "Patents as indicators of corporate technological strength," Research Policy 16 (1987): 143-155.

⁸Nakamae, Hiroshi, "Patent Harmonization Seen Delayed by U.S. Move: Washington Clings to First-to-Invent," The Nikkei Weekly 31 Jan. 1994: 3.

⁹World Intellectual Property Organization Meetings, "Draft Treaty Supplementing the Paris Convention for the Protection of Industrial Property As Far As Patents are Concerned (Patent Law Treaty)," Industrial Property February 1991: 118-152.

¹⁰In April of 1992, Senator Dennis DeConcini, D-Ariz., and Rep. Williams J. Hughes, D-N.J., introduced legislation in both the House, HR 4978, and the Senate, S2605, called the Patent System

American small businesses. The majority of benefits from the proposals would be for large multi-national businesses and even those benefits would be meager when compared to the strengths of the current patent system that would have to be abandoned. In fact, foreign businesses would stand to benefit from the harmonization package more than American businesses.

If America were to accept the current Harmonization Proposal, many aspects of the U.S. Patent system would have to be changed. Most dramatically, it would convert the patent granting procedure from a first-to-invent system to a first-to-file one. Under the current system, a patent in the U.S. is awarded to the inventor of the item or process. Under the first-to-file system, patents would be awarded to whomever files for a patent first, regardless of who conceived the design first. Although, first-to-file is the system that the majority of nations in the world use, it is intrinsically less fair and less just than the current U.S. first-to-invent system. Only the United States, the Philippines, and Jordan use the first-to-invent system¹¹. Nevertheless, the system has merit. According to Donald Banner, former U.S. Commissioner of Patents, harmony is not at all what first-to-file will bring to the U.S.: "Abandoning a patent system that has been successful for 200 years will promote world trade, but only for our competitors. The American economy will go down the tubes. It's like saying that we should abandon the Bill of Rights just because we're the only nation that has one."¹²

Harmonization Act that would change many of the practices of the U.S. government's two century old patent practice.

¹¹Riordan, Teresa, "Patents: An Outspoken Inventor Protests Efforts to 'Harmonize' Global Rules." The New York Times 29 Nov. 1993: D2.

¹²Business Wire. Thursday, January 27, 1994.

In addition to being less just in determining priority, the first-to-file system would give a great advantage to large corporations over small businesses. Large corporations often have patent counselors in their internal legal departments and can file patents very quickly because they can afford to have a department exclusively dedicated to doing that. On the other hand, small businesses and individual inventors do not have the finances to keep patent attorneys on hand and would be at a great disadvantage since they would not be able to file as quickly or indiscriminately as the competing large corporations.

The U.S. is very different from the rest of the world in that small businesses are what drive its growth. Changing the patent system to better match those of other nations which don't have the same sort of business constituency, is not necessarily beneficial even though it would be harmonizing with the rest of the world. A fair harmonization treaty should be able to protect inventors in small and large U.S. businesses and foreign corporations equally well. The current harmonization proposal does not do so.

In the following chapters, the proposed harmonization changes are examined in detail. Though there are some strong motivations for harmonization, the "harmonization" package, as it is currently proposed, is not fair enough to American small inventors nor does it offer enough benefits to large American businesses to be worthy of approval. Nonetheless, harmonization should remain a long term goal for the U.S. and efforts to achieve a more beneficial harmonization proposal should be continued by considering the interests and needs of both large and small American businesses as well as foreign corporations.

CHAPTER 2

The Current United States Patent System

In 1952, the U.S. patent system was codified into two Federal documents. One is Title 35 of the United States Code: Patents; and the other is Title 37 of the Code of Federal Regulations: Patents, Trademarks, and Copyrights. The two statutes define the procedure under which patents are granted, stipulate the limitations on patentability, and delineate the rights to which patentees are entitled. A general overview of the main requirements for patenting in the U.S. is discussed in this chapter.

First among the patent rules is the one stipulating who may apply for a patent. In the U.S., intellectual property is considered a class of personal property to which owners have natural rights. Since ideas should belong to the people who think of them, inventions should similarly belong to inventors. Thus, the United States Patent and Trademark Office (USPTO) will only issue a patent to the person to whom an invention belongs, and that is the person who actually first conceived the idea and then diligently reduced the invention to practice. Thus, only inventors may apply for patents and are entitled to its rewards provided that certain requirements are met.¹³

¹³35 U.S.C. Section 102: Conditions for Patentability

"A person shall be *entitled* to a patent unless..." (italics mine.)

(a) the invention was known or used by others...

(b) the invention was patented or described in a printed publication...

(c) he has abandoned the invention..

(f) he did not himself invent the subject matter sought to be patented ..."

In the case that there are two or more inventors who file patent applications for the same invention, an interference proceeding is used to settle the dispute.¹⁴ America, unlike the great majority of nations of the world, operates under a first-to-invent patent system, where the first person to conceive and reduce an invention to practice is awarded the patent. In an interference proceeding, the first person to file a patent application for the invention is called the "senior" party, and the other is the "junior" party. The junior party has the burden of proof in an interference proceeding. The outcome of an interference proceeding may be categorized into four decisions which depend upon three criteria. The first criterion is the date of conception. The date of conception of the invention is simply the date when a complete mental picture of an invention first came to an inventor.¹⁵ The second is the date of reduction to practice which is when an invention is first in the physical or productive format in which it can be used successfully or when a patent application for a theoretically operative model is filed.¹⁶ The third criterion is the diligence in an inventor's efforts of development. In the most obvious interference outcome, whichever party conceives of the invention first, reduces it to practice first, and does not abandon the invention before filing a patent application wins priority regardless of diligence. In another scenario, the inventor who conceives of the invention first, is diligent in its reduction to practice but is not the first to do so is awarded the patent. In a different situation, if an inventor is not the first to conceive and also is not the first to reduce an invention to practice, he does not receive the patent. In the fourth scenario, if the inventor is not the first to conceive but is the first to reduce to practice, then he is

¹⁴Title 37 Code of Federal Regulations (37 C.F.R.) Sections 1.602-88 (1988) are the regulations for interference proceedings.

¹⁵Rines, Robert, Create or Perish prelim. ed. (Washington D.C., Acropolis Books, 1969) 36.

¹⁶ibid.

awarded priority so long as the inventor who was the first to conceive did not show diligence in reducing the invention to practice.¹⁷ Thus, if two parties wish to dispute who has priority for the patent on the same invention, interference proceedings would be used to resolve the issue.

In the case of an interference that involves an invention that was made abroad but was not patented abroad, only the dates of acts prior to the application date that occurred in the United States may be entered as evidence. Because of this restriction, inventors residing in the U.S. have an advantage in the U.S. patent system over inventors in foreign lands. The advantage for U.S. residents is often a sore point with other nations, so the issue is often addressed at international patent harmonization talks.

Having explained who may apply for a patent and who may be issued a patent, the topic of allowable subject matter for a patent is next for clarification. When an inventor applies for a patent, the invention must fall into one of four categories. It must be a process, machine, manufacture, or composition of matter unless it is a new use of one the four.¹⁸ A process can be defined as a series of steps for the accomplishment or production of a certain result.¹⁹ An example of a process would be a series of steps producing a chemical reaction. The next category for inventions is a machine, which could be described as "a piece of apparatus that achieves a useful result functionally".²⁰ Related to the machine is a manufacture which is "an item that

¹⁷Macedo, Charles, "First-to-File: Is American Adoption of the International Standard in Patent Law Worth the Price?" Columbia Business Law Review 1988:2:543-586.

¹⁸35 U.S.C. Section 101: Inventions Patentable.

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor..."

¹⁹Rines, Robert, Create or Perish prelim. ed. (Washington D.C., Acropolis Books, 1969) 28

²⁰ibid.

can be produced or manufactured by a 'machine'".²¹ The last category of inventions is a composition of matter. It is what it would seem to be, a new combination of elements such as a newly formed chemical compound. However, the compound would have to be invented; if it already exists in nature, it is not patentable.²² In summary, processes, machines, manufactures and compositions of matter are the four categories in which the subject matter of the invention must fall in order to be patentable.

An additional requirement for creations to be patentable is that they must display novelty. The invention cannot have been patented before. It also cannot have been described in a publication in this or a foreign country or be in public use or sale in the U.S. for more than one year before the filing of a patent application in the U.S.²³ This one year leeway that inventors have to apply for a patent is known as a grace period and will be discussed further in the next chapter.

Besides having to meet novelty requirements, an invention must also be non-obvious and diligently pursued. Non-obviousness is a newness and originality factor. The subject matter of a patent must not be obvious to a person of ordinary skill in the field in which the invention is made.²⁴ In addition, the inventor must have been working diligently on the invention to its reduction to practice because an abandoned

²¹ibid.

²²ibid.

²³However, if the invention was known or used abroad but was not patented or described in a printed publication before the invention was made in the U.S., a patent can be obtained in the U.S. This is one of the points that foreign countries dislike about the U.S. patent system and have proposed be changed.

²⁴35 U.S.C. Section 103: Conditions for Patentability; Non-Obvious Subject Matter.

"A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

invention cannot be patented.²⁵ Thus to obtain a patent, the invention must meet novelty and non-obviousness criteria and the inventor must be diligent in his efforts.

Though the rules that inventors and inventions must adhere to are quite rigorous, a patent application will be processed expediently by the USPTO if all the mentioned requirements are met.

While the Patent Office is reviewing a patent application, the subject matter in the application is kept secret. In fact, a patent application is not disclosed by the Patent Office until a patent actually issues to the inventor. Because of the secrecy, a potential patentee does not have to give up his option to hold the subject matter of the potential patent as a trade secret until it is certain that a patent will, indeed, issue.

When the Patent Office is ready to issue a patent, the inventor will be granted the patent provided that he takes an oath certifying that he is the inventor and that he has paid the appropriate filing fees. In the U.S., small businesses, those with under 500 employees, and independent inventors, those people who are not bound to assign or license their patent to any particular business or institution, pay a smaller filing fee than large businesses. This policy of the Patent Office does help alleviate some of the financial barriers that small businesses and independent inventors are up against when trying to file for a patent. Thus, the Patent Office currently does recognize the need to stimulate and encourage small entities to innovate.

²⁵35 U.S.C. Section 102: Conditions for Patentability; Novelty and Loss of Right to Patent.

"A person shall be entitled to a patent unless-

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the application for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention,"

However, the Patent Office could do much more to encourage small entities and to alleviate problems that large corporations face when filing. There are changes that the Patent Office could make that would more closely harmonize the U.S. patent system with those of other nations in the world, without detracting from the strength of the current U.S. system. However, these changes do not underlie the Patent Harmonization Proposal that is currently under consideration.

CHAPTER 3

Current Patent Harmonization Proposals

The Patent Harmonization Proposal that was introduced in the U.S. Congress in 1992 has its roots in a long history of international negotiations. Harmonization of patent systems in the world have been a long term goal discussed for over a century at international talks. For instance in 1873, the Congress for Patent Reform first met at Vienna to discuss the nature of the rights of inventors and to try to achieve uniform patent legislation in all the countries attending the Congress.²⁶ Ten years later, eleven countries signed the Paris Convention which created a Union for the protection of industrial property. The major development of the Paris Convention was that it stipulated that foreign nationals would be treated in the same manner as nationals of each of the signatory countries. This agreement allowed foreign nationals to obtain patent rights in member countries. A century later, more than eighty nations are members states in the Union.

Since the creation of the Paris Convention, there have been various other international discussions and agreements for protection of intellectual property across national borders. In 1967 the World Intellectual Property Organization was created in order to further the discussion and protection of intellectual property. Currently, the WIPO is under the auspices of the United Nations. In addition, the General Agreement on Tariffs and Trade (GATT) has also been a table for the discussion of

²⁶Ladas, Stephen P, Patents, Trademarks, and Related Rights: National and International Protection (Cambridge, MA: Harvard University Press, 1975) 60.

intellectual property rights.²⁷ Both of these organizations are influential sources of the current movements toward patent harmonization throughout the world.

Over the years, in the tradition of previous harmonization talks, the WIPO has been trying to negotiate a proposal for patent laws that would create world wide similarities in patent systems. The movement toward an international harmonization treaty for patent law has been proceeding since 1985. A Diplomatic Conference to continue discussions was scheduled for the middle of 1994 but has been indefinitely postponed as a result of the recent U.S. decision to postpone consideration of moving towards a first-to-file system. At previous negotiation sessions in Geneva, the WIPO drafted a "Basic Proposal" for harmonizing some of the patent laws throughout the world. The "Basic Proposal" is in the form of a draft treaty that was negotiated by a Committee of Experts which completed their last session in November of 1990.²⁸ In the Proposal are rules that would require significant changes in the U.S. patent system if the Proposal is adopted. These WIPO and other proposals for patent system changes were embodied in proposed U.S. legislation such as the Patent System Harmonization Act of 1992²⁹ and related bills.³⁰

Despite significant international pressure for the U.S. to accept the harmonization proposal, in January of 1994, Secretary of Commerce Ron Brown announced that the U.S. would not seek to resume negotiations of a treaty

²⁷One of the 15 negotiating groups in the GATT negotiations includes Trade-Related Aspects of Intellectual Property Rights, or TRIPS. Many patent provisions have been proposed through TRIPS, especially during the Uruguay round of trade talks.

²⁸World Intellectual Property Organization, "The 'Basic Proposal' for the Treaty and the Regulations Submitted, under Rule 29(1) of the Draft Rules of Procedure, by the Director General of WIPO (PLT/DC/3)." *Industrial Property* Feb. 1991: 118-138.

²⁹Patent System Harmonization Act of 1992 (S2605)(HR4978)

³⁰The Patent Filing Simplification Act of 1992 (S3151) and Patent Simplification Act of 1994 (S1854) were of smaller scope than the Patent System Harmonization Act of 1992 but also proposed changes to the U.S. patent system to harmonize according to the WIPO draft proposal.

harmonizing the world's patent laws. Because of differences in culture, economics and political formats, even the countries who have been participating in international intellectual property harmonization discussions for over a century have developed very different patent systems. The U.S. Patent System is quite different, even in the most fundamental ways, from the European Patent System, upon which the WIPO Draft Treaty is based. If the Draft Treaty is adopted as it stands, the creative community in the United States would make considerably more concessions than it would receive in benefits. Many people are wary of changing the U.S. patent laws to be more similar to European laws. For instance, Secretary Brown stated that he is not convinced that enough small inventors and entrepreneurs would benefit from a change of systems.³¹ The United States simply has such a different approach to patent protection than the major industrial countries of Europe and also Japan, that switching over to a system more similar to ones in other countries would fundamentally change the protection of inventor's rights in the U.S.

The major provisions of the Basic Proposal that is being disputed by inventive groups and Congressional leaders in the United States are as follows: first-to-file, prior user rights, publication in 18 months, a new type of one-year grace period, and a 20 year term for patents from the date of application filing.

3.1 First-To-File

First-to-file is the most disputed of all the major provisions and has the political backing of some large multi-national corporations all over the world and in the United States. The United States operates on a patent award system, known as the first-to-invent system, that awards patents to the first inventor. All of the major industrial

³¹"U.S. Will Not Seek Renewal of Talks on Global Harmonization of Patents," BNA International Trade Daily 25 Jan. 1994.

countries in the world other than the U.S. operate on the first-to-file system that awards patents to the first person to file a patent application. When the U.S. representative to the WIPO suggested that the Draft Treaty be changed from a first-to-file system to a first-to-invent system, all 87 other countries attending unanimously voted against the suggested change. Clearly, the first-to-file system is favored over the first-to-invent system by other countries. In addition, in the United States, the first-to-file system is said to have the backing of the National Association of Manufacturers, in which many large corporations have membership; the Intellectual Property Organization, which represents large corporate patent holders; and the American Intellectual Property Law Association, an association of patent attorneys. These organizations in the U.S. support the first-to-file initiative because they feel the system would simplify the patent application process. They argue that if the U.S. adopts a first-to-file system, the procedure for filing a patent internationally would be greatly simplified. In addition, they point out that the time consuming and expensive interference procedure that only the U.S. is encumbered by will be totally eliminated. They declare that only second to file inventors, who comprise less than one percent of the patent applications, would lose out if interference is eliminated. In summary, supporters of the first-to-file system argue that the system would be better for the U.S. because it would be more convenient, eliminate costly disputes of priority, and harmonize the U.S. with the rest of the world.

Proponents of first-to-file may make the system sound like the cure for current interference proceedings, but when one considers how changing to a first-to-file system would affect the U.S. in a more holistic and realistic view, the first-to-file system loses much of its appeal. The American first-to-invent system, which has been in effect for centuries, is meant to indirectly stimulate industry by securing exclusive rights to inventors in exchange for the dissemination of their invention to the public.

In Europe and Japan, the first-to-file system used is meant to promote industry directly by publishing all patent applications quickly and granting the first person to file an application more limited rights than those that are secured to inventors in the U.S. Thus, the U.S. patent system stimulates industry in a more indirect fashion than the European or Japanese systems because it does not act primarily as a publishing house. Clearly, there is a difference at the fundamental level in the two types of patent award systems. Continuing on with another argument against the U.S. adopting a first-to-file system, the fairness of the first-to-invent system is definitely superior to that offered by the first-to-file system. There is little dispute that awarding priority to the inventor who was first to achieve the invention is more just than awarding priority to the person who is only the first to file a patent application. Whereas first-to-invent advocates believe that the person who has the creative genius and diligence to transform an idea into a real invention should be awarded for his efforts, first-to-file advocates sight simplifying bureaucratic accounting as a reason for adopting their system for priority. However, first-to-file could actually slow down and delay the processing of patents. First-to-file would require inventors to file as quickly as possible, thus encouraging the flooding of patent offices with "half-baked," incomplete applications. First-to-file would then require inventors to continue to file further applications as the real invention emerges. Every inventor would need to file every new idea as soon as it came into mind. Thus, first-to-file would lead to the overwhelming of the patent office with a plethora of wild, sketchy ideas rather than carefully refined designs. Thus, the fairness and simplicity of the first-to-file system are not clearly superior to those of the first-to-invent system.

First-to-invent is more in line with the inventive process and allows the inventor to refine his product and test it without losing priority rights. The inventive process does not work the way the first-to-file assumes it would. Inventors do not come up

with the complete picture of the invention at an early stage in the conceptual process. Instead, inventors go through various stages of redesign and implementation, often redesigning and modifying their invention hundreds of times in ways that could not have been foreseen at the original conception of the invention. Thus, the process of creation for inventions does not conform to filing applications for inventions at a very early stage because the end result is often times dramatically different from the original idea. Under a first-to-file system, inventors would have to file a preliminary application as soon as they think of an idea for a design. Then as the design undergoes modification, they must keep filing and re-filing applications. Whereas under a first-to-invent system, an inventor could wait until the invention is in its final stages before filing and would not have as much paperwork to overcome in order to seek patent protection. Another way that the first-to-file system is less harmonious with the inventive process is that it requires the final patent application to be filed within 12 months of the preliminary application. Is it realistic to assume that all inventions, or even some inventions can move from the conceptual design phase to full implementation in a mere year? Having had some experience in the design process, I would say that limiting the time in which an inventor must complete his invention without losing patent rights is a bureaucratic heaven, but an inventor's nightmare. Time constraints usually already exist to rush an inventor in the development of the invention. The market incentive can be enough to drive the inventor to proceed as quickly as possible with the design. In addition, the fear of being involved in an expensive interference proceeding can also hurry an inventor along. The inventive process itself, without bureaucratic time limits imposed, requires a combination of creativity, skill, tenaciousness, and ingenuity in order to exist. This combination of personal traits is already a rarity without the Patent Office mandating additional requirements that inventors also concentrate their talents into a time frame

of one year. Clearly, the first-to-file system does not complement the inventive process as well as the current U.S. system.

An additional way that the current first-to-invent system is superior is in its offering of equal opportunity to less wealthy inventors. Since the first-to-file system would necessitate a race to the patent office, only relatively wealthy inventors would be able to take full advantage of the system to file every new idea they have as soon as possible because every application would still require an application fee and perhaps the need to pay a patent attorney for additional advice. The first-to-file system would give large corporations an advantage over the inventor working at home in his garage. Taking into account that individual inventors were granted about 20% of the patents in recent years³² and recalling that small businesses, not large corporations, are the source of new jobs in the current U.S. economy, the rights of the small inventors should not be compromised. The significance of the 20% of patents granted is further enhanced when one considers that about 50% of patents granted in the U.S. in recent years have been to foreigners.³³ Thus, the small business inventive community in the United States is a very significant portion of the patent users that would be hurt by adopting a first-to-file system. Approving a first-to-file system for the U.S. would be detrimental to small businesses and the economy.

In yet another argument against adopting a first-to-file system, some hold that the first-to-invent system is the system that the U.S. Constitution ordains, and

³²Robert, Charley, "'Harmonizing' Patent Laws Causes Discord," Los Angeles Daily Journal 7 May 1992: 6.

³³Masaaki, Kotabe, "A comparative study of U.S. and Japanese patent systems," Journal of International Business Studies 1992: 23: 1: 147-68.

therefore, a first-to-file system would be unconstitutional.³⁴ Clearly, there are many arguments against the first-to-file system.

In summary, the advantages for adopting a first-to-file system are that it would:

- allow the U.S. to harmonize with rest of the world in the filing of patent applications.
- simplify the international patent application process.
- eliminate interference proceedings.
- encourage faster filing of patent applications.

The disadvantages for a first-to-file system are that it would be:

- a fundamental alteration to a successful U.S. tradition.
- less fair in awarding priority.
- less friendly to the inventive process.
- encouraging more incomplete applications.
- disadvantages to a major portion of the inventive community.
- encouraging patent flooding that will encumber the Patent Office.
- possibly unconstitutional.

3.2 Prior User Rights

The U.S. first-to-invent system is deeply grounded in its Constitutional roots that stipulate the promotion of securing to inventors the exclusive rights to their

³⁴James Chandler, director of the Computer Law Program at George Washington Law Center, argues that first-to-invent was contemplated by the Constitution. Therefore, any system preserving the rights of someone who isn't the first to invent is of dubious constitutionality.

Kaltenheuser, Skip, "Keep 'First to File' Patent Rule Pending," The Christian Science Monitor 7 June 1993: 19.

inventions.³⁵ Exclusive rights are meant to be granted to inventors who bring their discoveries out into public use for the betterment of society.

Under the first-to-file system proposed by the WIPO and in the Patent Harmonization Act of 1992, a provision to secure rights for those who are not the first to file an application has been included. Prior user rights are proposed to modify a strictly first-to-file system to be more equitable to those who cannot make it to the patent office first with their applications. Instead of having interference proceedings to determine priority, the first-to-file system would award priority to the first person to file an application but would give a free license to anyone who can show that they had put "serious preparation"³⁶ into the same invention. This free license is known as the prior user right. The prior user right was originally intended to protect the people and businesses that were already using the invention commercially before another person filed a patent for the invention from infringement. However, the language of the proposals are currently so vague that they would protect anyone that had seriously tried to make the invention from infringing upon a patent. Under the current

³⁵Article I, Section VIII of the Constitution: "The 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."

³⁶Patent Harmonization Act of 1992 (S2605) - "@ 273. RIGHTS BASED ON PRIOR USE (a) In general. - A person shall not be liable as an infringer under a patent granted to another with respect to any subject matter claimed in the patent that such person has, acting in good faith, commercially used or commercially sold in the United States, or has made effective and serious preparation therefor in the United States, before the filing date or priority date of the application for the patent.

World Intellectual Property Organization, "The 'Basic Proposal' for the Treaty and the Regulations Submitted, under Rule 29(1) of the Draft Rules of Procedure, by the Director General of WIPO (PLT/DC/3)." Industrial Property, Feb. 1991: 127.

"Article 20: Prior User...a patent shall have no effect against any person (hereinafter referred to as 'the prior user') who, in good faith, for the purposes of his enterprise or business, before the filing date or, where priority is claimed, the priority date of the application on which the patent is granted, and within the territory where the patent produces its effect, was using the invention or was making effective and serious preparations for such use; any such person shall have the right, for the purposes of his enterprise or business, to continue such use or to use the invention as envisaged in such preparations."

phraseology, the Harmonization package would allow anyone who had worked on a design similar to that of a patented invention to obtain a free license. Thus, inventors would no longer be secured exclusive rights to their discoveries, but would be sorely compromised in the proposed system.

Under the current European Patent Convention which fourteen countries are party to, prior user rights are coupled with first-to-file. Thus, the harmonization proposal is meant to change the U.S. system so that it is more like the European Convention. However, the same provision for prior user rights in Europe can have a totally different effect in the United States. In Europe, very few parties take advantage of the prior user right. However, because the United States is a society that tends to make more than ample use of its legal system to bring suit, prior user rights could bring to the U.S. a new, time consuming proceeding of determining who has actually put "serious preparation" for use into an invention and can have a free license. Potentially, if the U.S. adopts the Harmonization Proposal, time consuming and expensive interference proceedings will be eliminated only to be replaced by prior user determination proceedings that could be just as expensive and complicated as interference proceedings. Thus, due to cultural and legal differences, prior user rights in the United States could have a very different effect than prior user rights currently do in Europe.

In summary, the advantage for prior user rights is it:

- gives free rights to those who do not file first, but worked on the invention.

Whereas, the disadvantages for prior user rights are it:

- eliminates the exclusive rights of patent holders.
- is too vague in its language.

- will allow anyone who has put "serious preparation" into an invention that is patented by another person to claim a free license.
- unconstitutional because exclusive rights are not being secured to inventors.

3.3 18 Month Publication

Another area of U.S. patent laws that differs from the Draft Proposal suggestions is the time when patent applications are published by the USPTO. Under current U.S. regulations, patent applications are not published by the PTO unless the application is approved and a patent is granted. Only after the patent is issued is the patent application then published. In contrast to the USPTO, the European Patent Office (EPO) and the Japan Patent Office (JPO) publish patent applications before patents are granted. In fact, the granting of a patent is not a condition for their publication of the patent application. Instead, all patent applications are published 18 months after their filing dates. The Draft Proposal stipulates that member states would need to adopt an 18 month publication system like that of the European and Japan Patent Offices. Thus, the European and Japanese 18 month publication regulations would be what the U.S. would have to adopt if it accepted the Draft Proposal.

The current publication upon granting system that the U.S. employs has some benefits for inventors submitting patent applications in the U.S. First, it allows an inventor to keep the invention secret until protection is granted. Secrecy is often a key factor in obtaining an edge in a market, and thus would assist the inventor in his or her endeavors in putting the invention on the market. Second, the current system allows an inventor without losing the secrecy of the invention to withdraw the patent application at any time before the patent is issued. Since application processing times

can be on the magnitude of years rather than months,³⁷ an inventor has the opportunity to delay deciding whether to keep the invention a trade secret or to choose patent protection. Thus, the advantages of the current U.S. system are that it gives inventors a market edge and more time to decide which type of protection to seek.

Besides the two advantages, which are of considerable importance to inventors and small businesses, the U.S. publishing rules do have some disadvantages too. Since Europe and Japan already work with an 18 month publication system, applications of U.S. filers in those countries would be open to public dissemination 18 months from the filing date. In Japan, this gives the Japanese a great advantage because their patent applications are required to be filed in Japanese. Thus, when the Japan Patent Office publishes the application in Japanese, those who understand Japanese can read all about the patent. Meanwhile in the U.S., if the patent is still pending for the same invention, the application is still held in secrecy by the USPTO. Therefore, it is possible that the Japanese can get a head start on U.S. companies for designing around future patents. Americans are also at a similar disadvantage in Europe. Though the European Patent Office is supposed to publish in English,³⁸ in practice there is sometimes a delay in the publication of patent applications in English. Thus, the U.S. patent publishing rules are to the disadvantage of American based filers if considered on an international filing basis.

An additional possible disadvantage to the U.S. system is that it may be slower to disseminate information to the public; but since the average time for issuance of a

³⁷Though the U.S. PTO claims that their average pendency period for patents is around 19 months, the actual time before the inventor is granted a patent is sometimes considerably longer than 19 months because the usual second action of the PTO for an application is to reject it. Then the inventor must re-file the application as a continuation or continuation-in-part application or bring up the matter with the Board of Appeals in the Patent Office.

³⁸Patent applications may be submitted to the European Patent Office in either English, French, or German.

patent in the U.S. is under two years, there is little advantage in the 18 month publication since the second publication would occur soon after the 18 month publication, at the granting of the patent. Also, an 18 month publication requirement would entail substantive additional costs in the U.S. Patent Office that is now supported only by inventor's fees. Since the patent system is supposed to be the machine through which new and innovative techniques are disclosed to the public, the public would be better served with faster publication of applications. However, an 18 month publication requirement would not considerably speed dissemination and would entail the raising of filing or maintenance fees.

In summary, the advantages of an 18 month publication system are:

- Japanese, German, and French applications will no longer be accessible before English language applications.
- the public is better served with slightly faster dissemination of innovations.

The disadvantages of an 18 month publication system compared to the current U.S. publication system are:

- inventors will not have as long of a period to decide on whether they want patent or trade secret protection.
- inventors will not have as great of a market edge over their competitors.
- inventors will have to pay for publication twice.

3.4 New Type of Grace Period

Related to the publication issue is the issue of what an inventor is allowed to publish before applying for a patent without invalidating it. In Europe and Japan, it is very simple and blunt. Any written publication by anyone about the invention before

a patent application is filed will invalidate the patent. Even a public showing of the invention before filing can invalidate the patent.³⁹ Quite differently, U.S. patent laws are lenient with publication before filing. Any publication by the inventor or a third party and any public showing of the invention will not invalidate the U.S. patent so long as the inventor files an application in the USPTO within one year of the publication or showing. The one year leniency period that the U.S. offers is known as the U.S. grace period. In contrast, the grace period proposed by the WIPO is a hybrid of the U.S. grace period and the European and Japanese restrictions on publication before filing. The Draft Proposal calls for a grace period of its own, but it is drastically more limited than the grace period offered by the U.S. The Proposal suggests that inventors be protected from their own publications up to 12 months before filing, but does not protect against third party publications, filings, or public showings.

The Draft Proposal's grace period has only one advantage. If adopted it would make the European and Japanese systems more lenient to publications before filing. Other than that one point, the Proposal's grace period has a myriad of disadvantages when compared to the grace period currently in use in the United States. Filing and maintenance fees over the life of a patent do cost a considerable amount: about \$7500 (\$3750 for a small entity) in the United States and about \$88,000 in Europe⁴⁰. Since

³⁹Exceptions to the disclosure rules of the European Patent Office are listed in the European Patent Convention:

Article 55: Non-prejudicial disclosures

"...a disclosure of the invention shall not be taken into consideration if it occurred no earlier than six months preceding the filing of the European patent application and if it was due to, or in consequence of: a) an evident abuse in relation to the applicant...b)the fact that the applicant...has displayed the invention at an official or officially recognized, international exhibition falling within the terms of the Convention on international exhibitions..."

⁴⁰Lehman, Bruce A. "New Patent Office Head Lehman Seeks Stronger, More Defensible Patents," Chemical & Engineering News ed. Janice R. Long, 17 Jan. 1994: 13-16.

filing is expensive, an inventor often needs to conduct an economic evaluation of whether the invention is worth patenting. The one way to find out whether or not an invention will have a market is to conduct a market survey. However, in doing such a survey, it is necessary to disclose or show the invention to the public. The U.S. system allows an invention to be in public use or on sale up to one year before the filing of the patent without invalidating the entitlement to the patent.⁴¹ Thus, test marketing of the invention is allowable before deciding to seek patent protection in the United States. In addition, the U.S. grace period allows for testing for safety, for improvements to be made to the invention, and even for early dissemination of information about the invention to be patented. The inventor or any third party can publish information about the invention up to one year before filing a patent application. Thus, the inventor can publish his discoveries before filing, thereby benefiting the public in a more timely fashion than would a mandatory 18 month publication policy of patent applications. However, the Draft Proposal's grace period only protects the inventor from his or her own publications up to one year before filing. This stipulation is actually ineffectual, because third party publications before the filing of a patent would be considered prior art and would invalidate a patent. Thus, if operating under the proposed grace period, no inventor in his or her right mind would consider publishing the invention before filing because once the invention is published, a third party can then read the inventor's publication, write his own publication about the invention, and invalidate the inventor's patent. On the whole, the proposed grace period offers hardly any added protection for inventors.

⁴¹35 U.S.C. Section 102: Conditions for Patentability; Novelty and Loss of Right to Patent.

"A person shall be entitled to a patent unless--

(b)the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States..."

In summary, the Draft Proposal's grace period has only one advantage:

- European and Japanese patent systems would be more lenient towards public disclosure of inventions than they currently are.

However, the disadvantages are numerous when the proposal is compared with the current U.S. system:

- inventors would no longer have up to one year after publication to decide whether or not to seek patent protection.
- inventors would no longer have up to one year to test market their invention before applying for a patent.
- inventors would be discouraged from publishing their invention as soon as possible, even before filing a patent application.
- the proposed grace period would not be used because it does not protect inventions from third party publications.

3.5 20 Year Patent Term Starting at Filing Date

Though full of disadvantages in many aspects, the Draft Proposal also has a proposal that would solve some current U.S. patent system difficulties. Currently, the U.S. does not initiate the term of the patent until the patent is issued. The system has led to some rather extraordinary, though extremely rare, patent applications that have issued over decades after the patents were first filed. These patents, coined "submarine patents" because they seem to come out of nowhere, have been the focus of dismay of some large companies in the U.S. In one case, it took over 36 years from the date of initial filing until the patent was issued. Thus, when the patent took effect 36 years after it was initially filed, all the time being held in confidence by the PTO, the patent surfaced to pose large liabilities to businesses that were using the

technology. Often viewed as unfair, "submarine patents" would be eliminated by adoption of a 20 year term limit on patents from the initial filing date.

However, the 20 year term limit does have one drawback. If the Patent Office takes a long time to process the patent and the inventor cannot find backing for starting a business to produce his invention because investors will not commit until they are sure of the exclusivity of the making, using, and selling of the invention, then the inventor would be forced to spend many useful years of the patent term in idle because of Patent Office delays.

Thus, the major advantage of the proposed 20 year patent term that begins with the initial filing of the patent is:

- it would eliminate the very few submarine patents there are.

While the disadvantage of the 20 year term is:

- it could unfairly shorten the effective time that the patent would be useful to the inventor.

3.6 Proposed Harmonization System vs. Current Systems

The Proposed Harmonization Treaty is most similar to the current European Patent Office system. The following table shows the similarities and differences between the Proposed Treaty and the United States, European and Japanese patent systems.

If the U.S. were to adopt the Draft Proposal, it would have to change all of its patent practices in all the five areas listed in the following table. The Europeans, on the other hand would hardly have to change and neither would the Japanese. Because of the changes that the U.S. would have to undergo if the Draft Proposal was adopted, careful weighing of the pros and cons of the Proposal must be made by the U.S. As it

stands now, the advantages, as explained in this chapter, of accepting all of the major stipulations of the proposed system do not obviously outweigh the disadvantages.

Table 1. Differences between the Draft Treaty and the current U.S., European, and Japanese Patent Systems.

Draft Proposal for Patent Harmonization	Used by United States PTO?	Used by European Patent Office?	Used by Japan Patent Office?⁴²
First to File	NO (uses first to invent)	YES	YES
Prior User Rights	NO (no prior user rights)	YES	YES
18 Month Publication	NO (publication upon issuance of patent)	YES	YES
1 Year Grace Period	YES (but U.S. grace period also protects from 3rd party publication)	NO (no grace period)	NO (no grace period)
20 Year Term Starting At Filing	NO (uses a 17 year term starting at grant of patent)	YES	NO (uses a 15 year term starting at publication date)

⁴²Information on the Japan Patent Office was found in: Hanabusa, Masami, An Analysis of Japanese Patent Law, (Lawrenceville, VA., Brunswick Publishing Corp., 1992).

CHAPTER 4

Patent Filing Characteristics of the Top Three Patenting Countries

While the U.S. has a present minority stand on the issue of how harmonization should proceed, in terms of sheer numbers of patents filed by residents and foreign nationals in the USPTO, no patent office of a country participating in the harmonization negotiations comes close to processing and granting as many patent applications to non-residents as the USPTO (see Tables 2 and 3). Though Japan may receive more applications during the year than the USPTO, one must take into account that Japanese patents are usually very narrow and often require the filing of multiple patents to sufficiently protect an invention. Considering the 1988 statistics, the Japan Patent Office (JPO) received three times as many patent application as the USPTO. However, during the same year the USPTO granted a total of 40% more patents to residents and non-residents combined and five times as many patents to non-residents as the JPO granted. Thus, the Japanese first-to-file patent system is not as proficient as the U.S. first-to-invent system for granting patents.

The top patent filing country in the European Community for what is believed to be a typical year, 1988, was the Federal Republic of Germany (see Tables 2 and 3). However, the USPTO received over 50% more patent applications from both residents and non-residents and over 30% more applications from only non-residents per year than Germany received. In addition, the USPTO granted over double the number of patents to both residents and non-residents and over 60% more patents to non-residents than Germany granted. Thus, it would seem that the U.S. first-to-file system is more hospitable to patent filers than the German first-to-file system is. Moreover,

the U.S. system has a better track record for granting patents to foreigners than the German system.

Table 2. Patent applications filed in the top 3 filing countries in 1988.⁴³

	Total Number of Patents Filed	Filed by Residents	Filed by Non-Residents
United States of America	147,344	75,632	71,712
Fed. Rep. of Germany	95,998	42,872	53,126
Japan	345,418	308,954	36,464

(data from 1988 WIPO Industrial Property Statistics)

Table 3. Patent applications granted in the top 3 granting countries in 1988.

	Total Number of Patents Granted	Filed by Residents	Filed by Non-Residents
United States of America	77,924	40,497	37,427
Fed. Rep. of Germany	38,890	15,704	23,186
Japan	55,300	47,912	7,388

(data from 1988 WIPO Industrial Property Statistics)

The next two tables show the top three countries that file non-resident applications in the United States, the Federal Republic of Germany, and Japan in 1988. Again, the U.S. system accepts more applications and grants more patents than either of the two top patenting countries in the world.

⁴³The Soviet Union had a greater number of patents filed in 1988 than the United States but is not included in this table because the focus of this thesis is on the patent systems of the United States, the European Community, and Japan.

Table 4. Top 3 countries filing the most non-resident patent applications in the United States, Fed. Rep. of Germany, and Japan in 1988.

	Largest Number of Filings	2nd Largest Number of Filings	3rd Largest Number of Filings
United States of America	Japan 29,613	Fed. Rep. of Germany 12,493	Great Britain 3,805
Fed. Rep. of Germany	United States of America 16,310	Japan 12,819	France 4,713
Japan	United States of America 15,374	Fed. Rep. of Germany 7,246	France 2,512

(data from 1988 WIPO Industrial Property Statistics)

Table 5. Top 3 countries receiving patent grants from the United States, Fed. Rep. of Germany and Japan in 1988.

	Largest Number of Grants	2nd Largest Number of Grants	3rd Largest Number of Grants
United States of America	Japan 16,158	Fed. Rep. of Germany 7,307	France 2,661
Fed. Rep. of Germany	United States of America 6,466	Japan 6,031	France 2,793
Japan	United States of America 3,229	Fed. Rep. of Germany 1,607	France 539

(data from 1988 WIPO Industrial Property Statistics)

More recent statistics show that from 1988 through 1991 the percent of patents that were held by foreign inventors made up 47% of U.S. patents.⁴⁴ Additionally, the percent of patents assigned to corporations from 1988 through 1991 were 79% of U.S. patents with about 48% of those patents held by U.S. corporations.⁴⁵

⁴⁴U.S. Department of Commerce NTIS, Industrial Patent Activity in the United States, (Springfield, VA., U.S. Department of Commerce NTIS, June 1992) A1.

⁴⁵U.S. Department of Commerce NTIS, Industrial Patent Activity in the United States, (Springfield, VA., U.S. Department of Commerce NTIS, June 1992) A1,A3.

In summary, patent filing and granting statistics show that the current U.S. system is more favorable to patent applicants and is more efficient at granting patents than even the top patenting first-to-file countries. Therefore, the U.S. system could be considered superior in at least the previously mentioned aspects to the currently used first-to-file systems upon which the harmonization proposals are based.

CHAPTER 5

Results of the Survey of Independent Inventors and Inventors in Small and Large Businesses in the United States

Of great importance to the U.S. economy are the inventors in small businesses and independent inventors trying to start up their own businesses. During the period from 1988 to 1991 about 14% of patents in the U.S. were held by individuals residing in the U.S.⁴⁶ However, the actual percentage is probably considerably larger since many "individuals" have incorporated their small businesses and would be classified in U.S. statistics as "corporations". Inventors in the United States are the people that will be most directly affected by changes in patent laws, yet the reactions of inventors to patent harmonization proposals have not been actively sought after by lawmakers. When holding hearings for The Patent Harmonization Act of 1992, Sen. DeConcini sought the viewpoints of an association of patent attorneys, legal counsel of large pharmaceutical firms, and even an association of universities. However, no inventors or entrepreneurs who used patents to start up businesses were asked to testify at the hearings. The inventive community has not been able to have its voice heard by the lawmakers and negotiators of patent harmonization and therefore lack representation in the determination of the profound changes that lay in store for them if the harmonization bills introduced in Congress are passed.

To help inventors overcome their political silence, several classes at the Massachusetts Institute of Technology in collaboration with the Academy of Applied

⁴⁶U.S. Department of Commerce NTIS. Industrial Patent Activity in the United States. (Springfield, VA., U.S. Department of Commerce NTIS, June 1992) A3.

Sciences and the Franklin Pierce Law Center have made the effort to survey inventors in order to determine and publish how inventors in the U.S. view the proposed changes in U.S. patent laws that stem from the WIPO Draft Treaty. The culmination of three semester's worth of interviews and survey questionnaires is presented in this chapter.

5.1 Organization

In the spring semester of 1993, Dr. Robert H. Rines' 6.931 Development of Innovations and Creative Ideas class at M.I.T. began its first attempt at soliciting the views of independent inventors. The class was organized into separate groups to interview independent inventors and investors in start-ups on several patent related topics. The five group topics were: 1) difficulties in the patent process for inventors, 2) problems for inventors when disclosing inventions, 3) inventors views of first-to-invent versus first-to-file, 4) the motivation and drives of inventors, and 5) views of venture capitalists toward investing in inventions. Each group was then further divided into groups of two and three persons to interview an independent inventor or a venture capitalist. The New England Association of Independent Inventors was invited to hold their monthly meeting at M.I.T. and was asked to be subjects of the class project. The Association graciously accepted the invitation and approximately 30 independent inventors were interviewed. In addition, the opinions of venture capitalists were solicited by the group investigating the views of venture capitalists towards investing in inventions. In the end, the class did collect a small sample of inventors opinions on the five group topics.

However, because this was the first attempt by the class to collect information from inventors on a wide variety of topics, difficulties were encountered. First of all, the separation of the class into groups and then into even smaller interviewing groups

led to very different questions being asked in each interview. Thus, it was not possible in all cases to interpret the interviewee's responses on the various topics into a consolidated class analysis. Secondly, the group of inventors that were chosen to be interviewed were a very small segment of the inventive community; independent inventors, very few of whom had yet launched any business start-ups. Because of these two problems, the data collected from the interviews may not have been representative of the inventive community, and questions asked were not consistent enough to analyze in a statistical manner. Though the data from the spring semester class was not incorporated into the survey results presented in this thesis, the organizational and surveying experiences gained from that semester's work was applied towards the classes in the following two semesters.

During the 1993 fall semester of 6.901 Inventions and Patents class, the two main problems of the previous semester's survey, inconsistent questions asked during interviews and too small of a demographic composition, were addressed and resolved. Questions asked of inventors and background information were unified so that a statistical analysis of survey results could be conducted after questionnaires were returned. The class worked together to create a single questionnaire form (see Appendix A) that would be used by all groups during their interviews. The survey form developed covered topics such as first-to-file, prior user rights, 18 month publication, and a new type of grace period. In order to solve the second problem of obtaining a more representative sample of the inventive community, the class was divided into new topic groups. Three of the four groups consisted of students who were responsible for interviewing inventors in large corporations, small businesses, and independent inventors. In addition, one group of students was responsible for soliciting responses from managers and administrators of large corporations and university research organizations. Although the new organization of the class

widened the sample of inventors to those in different size organizations, no attempt was made to have the sample be representative of all technological fields. In addition to personal interviews, over a thousand questionnaire forms were sent out to university licensing offices, inventors with small businesses, inventors in large businesses, and a nationwide independent inventor newsletter. However, only around 50 responses were returned. Thus, the problem of obtaining a larger response rate was left as a task for the next semester's class to solve.

In the 1994 spring 6.931 class, the students were once again divided into groups. The three groups formed were to survey inventors in small and large companies and independent inventors. The same basic questionnaire form that was used in the previous semester was modified slightly to cover additional topics such as length of patent terms, application processing time, and other current areas of concern with the USPTO (see Appendix B). However, unlike the previous semester, students were not involved in composing the questionnaire form and were not just responsible for sending out survey forms. Instead, each student was responsible for acquiring and analyzing at least two responses to the survey. Students often had their acquaintances or coworkers that were inventors fill out the surveys. Over 80 surveys were returned out of some 90 that were sent out. Thus, by giving more responsibility to each student participating in the project, a better response rate was achieved.

5.2 General Demographics

In total, 144 responses for the questionnaire forms were received. The responses are broken into two categories for analysis: one is the inventors, and the other is the administrators and managers. 129 of the responses were from inventors, and 15 responses were from administrators or managers of large companies or of large research organizations such as universities. The responses from the inventors are

further broken into two groups; one of inventors in small businesses (50 and under employees) and one of inventors in large businesses (over 50 employees). Independent inventors are included in the group of inventors with less than 51 employees. Of the 129 responses from inventors, 94 are from inventors who were either independent or worked in firms with 50 or less employees. In the presentation of survey results in this chapter, small businesses are considered those with 50 or less employees, unlike the Small Business Administration which considers companies with 500 or less employees to be small businesses. Because the focus of this thesis is to discuss the effects of patent law changes on inventors, especially those inventors who start up businesses, and since companies with 500 employees would most likely not be a recent start up, 50 employees was considered a more appropriate break off than 500.

The following table shows the break down of fields in which the respondents' inventions were associated. The predominant fields that survey respondents were involved in are the computer, electronics, and mechanical fields.

Table 6. Areas inventors were working in.

	All Inventors (%)	Inventors in Small Businesses (%)	Inventors in Large Businesses (%)	Large Research Organizations (%)
Biology	8	7	9	33
Chemistry	12	13	9	40
Computers	42	37	54	60
Electronics	42	38	51	53
Physics	15	18	9	33
Mechanical	32	33	31	47
Other	23	27	14	33

Table 7. Patenting characteristics of the businesses with which inventors were associated.

	All Inventors	Inventors in Small Businesses	Inventors in Large Businesses	Large Research Organizations
Average number of patents filed per year	30 *71%	3 *78%	130 *54%	11 *73%
Average number of U.S. patents held	286 *78%	5 *86%	1425 *57%	638 *60%
Average number of foreign patents held	77 *62%	2 *79%	1007 *17%	310 *33%
Average number of patents received in past 10 years	56 *76%	9 *88%	315 *43%	525 *66%

* indicates the response rate to the question

Table 8. Number of inventors who used patents to start up a business.

	All Inventors	Inventors in Small Businesses	Inventors in Large Businesses	Large Research Organizations
Number of Inventors with Patents Intended For a Start-up	56 *107/129	54 *81/94	2 *26/35	9 *14/15
Number of Inventors with Patents Not Intended For a Start-up	51	27	24	5
Number of Successful Start-ups Using Patents	41 *42/129	39 *40/94	2 *2/35	8 *8/15
Number of Unsuccessful Start-ups Using Patents	1	1	0	0

* (number of responses to question) / (total sample size)

The previous two tables show the average number of patents filed by the different sized businesses and also the usage of patents to start up new enterprises. Because large businesses employ greater numbers of inventors, large businesses file more patents than small businesses. However, the inventors in small businesses tend to use more of their patents to start successful new enterprises. Since, apparently

unlike the rest of the world, it is the business start-ups in the U.S. that have been creating the majority of new jobs,⁴⁷ patents granted to individuals or small businesses are very important in keeping the U.S. economy growing.

The next table shows how the patents filed in the last 10 years by the different sized businesses have been used. Businesses of all sizes were inclined to commercialize the majority of their patents themselves and let about a third of their patents go unused.

Table 9. Responses to the question: "What percentage of the patents filed in the last 10 years have been: commercialized by your company, involved in a joint venture, assigned to another company, licensed, or not used?"

	All Inventors	Inventors in Small Businesses	Inventors in Large Businesses	Large Research Organizations
% of patents commercialized by your company	56 *62%	55 *71%	60 *40%	19 *80%
% of patents involved in a joint venture	13	16	5	15
% of patents assigned to another company	6	8	0	1
% of patents licensed	24	29	7	38
% of patents not used	30	31	23	53

* indicates the response rate to the question

5.3 First-To-File vs. First-To-Invent

As discussed in Chapter 3, the WIPO Draft Proposal and the Patent Harmonization Act initiated in Congress both propose that the U.S. first-to-invent patent system be changed to a first-to-file system. Four questions on the survey form

⁴⁷Koretz, Gene, "Economic Trends: Tiny Employers Weigh Some Big Hiring Plans," Business Week 21 June 1993: 24.

sent out to inventors and businesses pertained to the first-to-file issue. The following figures show the responses to the survey questions.

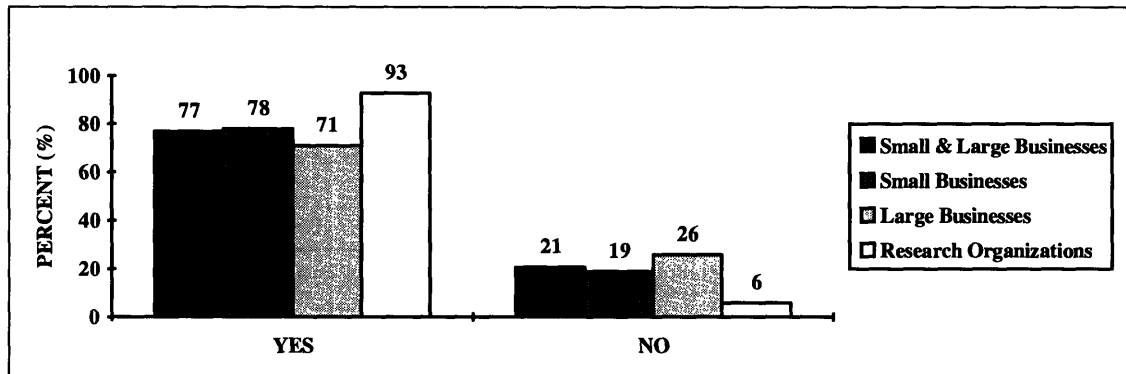


Figure 1. Responses to the question: "Are you familiar with the current patent laws?"

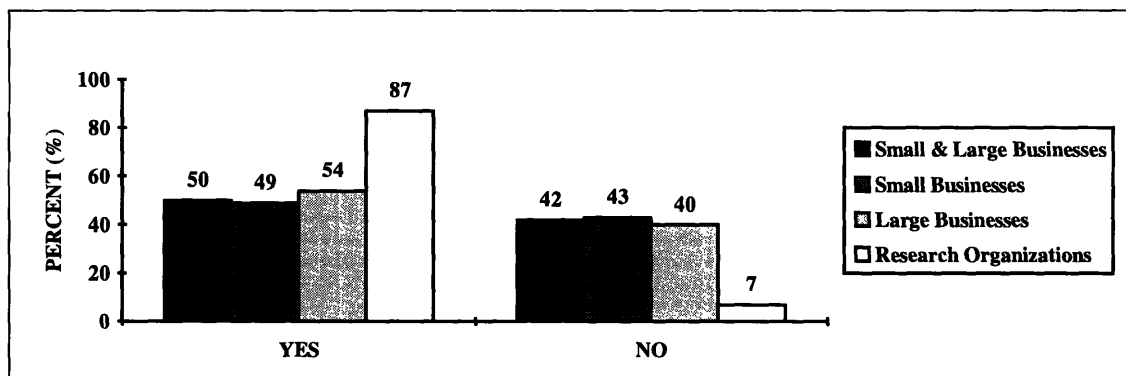


Figure 2. Responses to the question: "Are you familiar with the proposal to change the patent laws?"

The previous two figures indicate that about three quarters of the respondents were familiar with the current U.S. patent system, but only about a half were familiar with the proposed changes to the patent system. However, about 90% of the respondents that were administrators of research organizations were knowledgeable of both the current and proposed patent laws. The contrast in the amount of inventors as compared to administrators familiar with the proposed changes, indicates that inventors views are not necessarily reflected by administrators in research organizations or large companies. Managers and administrators in large companies have in general been in better communication with lawmakers about patent changes

than inventors. Since there is a large discrepancy between the opinions of inventors in both small and large businesses with the opinions of the administrators of large businesses, administrators do not represent the views of the inventors. Since mainly large businesses have the political and financial strength to make their views known to lawmakers, inventors, without lobbyists or political connections, have had few opportunities to be heard by the lawmakers who propose to change their rights. Thus, the proposed change from the first-to-invent system to the first-to-file system does not have sufficient input from a large portion of the inventive community, primarily the inventors.

Another difference in responses from inventors and administrators indicates an additional shortcoming in the reflection of proposed patent changes to what the inventive community desires. The following figure shows that inventors in small and large businesses overwhelmingly prefer the current patent system. However, administrators of research organizations prefer the proposed harmonization system more than any segment of inventors.

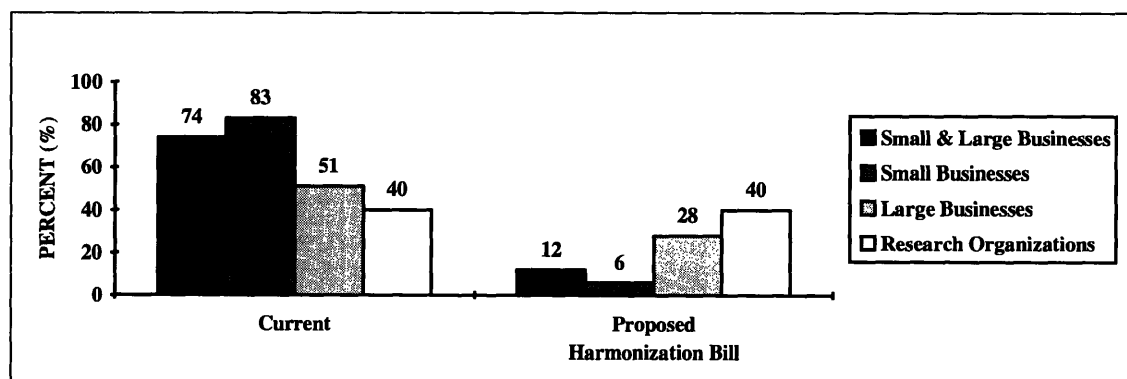


Figure 3. Responses to the question: "Which system do you prefer: Current or Proposed Harmonization Bill?"

A major argument of the proponents of the first-to-file system is that U.S. companies already need to use the first-to-file system because they already need to file in overseas first-to-file systems. However, if most U.S. companies are already using

the first-to-file system, why do the responses in the following figure indicate that the majority of small and large businesses, in addition to the research organizations, would need to change their patenting procedures?

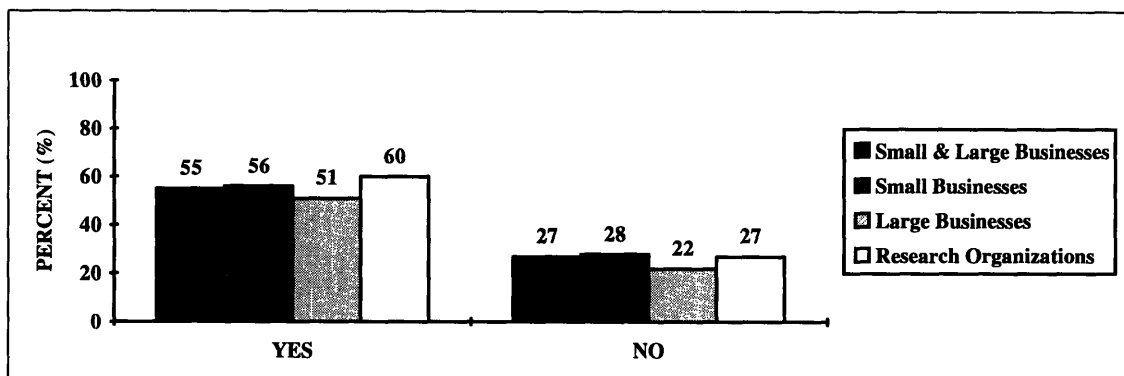


Figure 4. Responses to the question: "Would you or your organization change your patenting practices and policies if the U.S. were to adopt a first-to-file patent system?"

5.4 Prior User Rights

Along with change to a first-to-file system, the harmonization proposal includes the granting of "prior user" rights to compensate those who were not able to be the first-to-file. Prior user rights would allow any party who could demonstrate "significant" work amounting to "serious preparation" prior to the patent application date entitlement to a royalty-free, non-exclusive license. In short, patents would no longer be an exclusive right granted to the inventor and would become a weaker form of intellectual property protection.

The following figure shows that the majority of all respondents, inventors and administrators, would be less likely to use patents if prior user rights were granted.

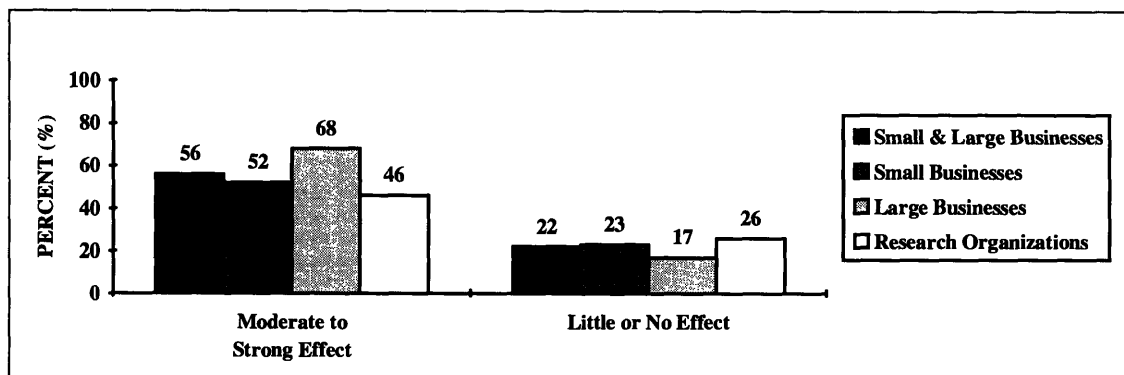


Figure 5. Responses to the question: "How serious of an effect would prior user rights have on your willingness to apply for patent protection?"

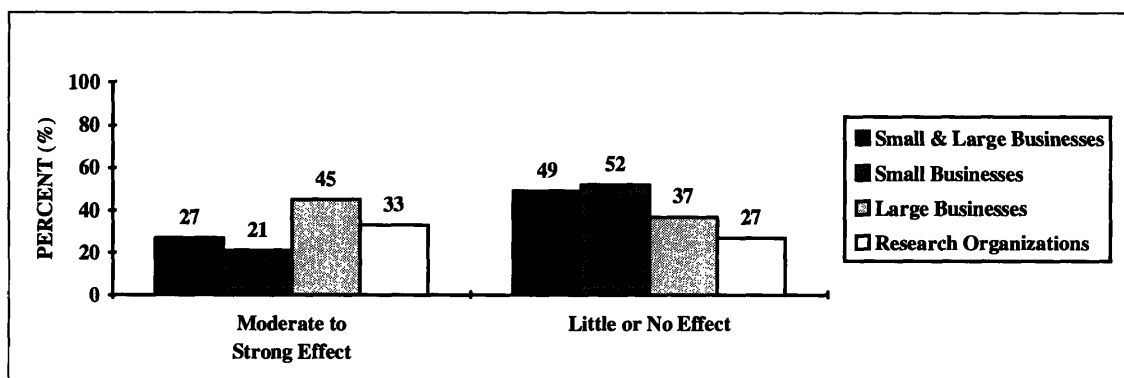


Figure 6. Responses to the question: "How serious of an effect would prior user rights have on your willingness to maintain trade secrets?"

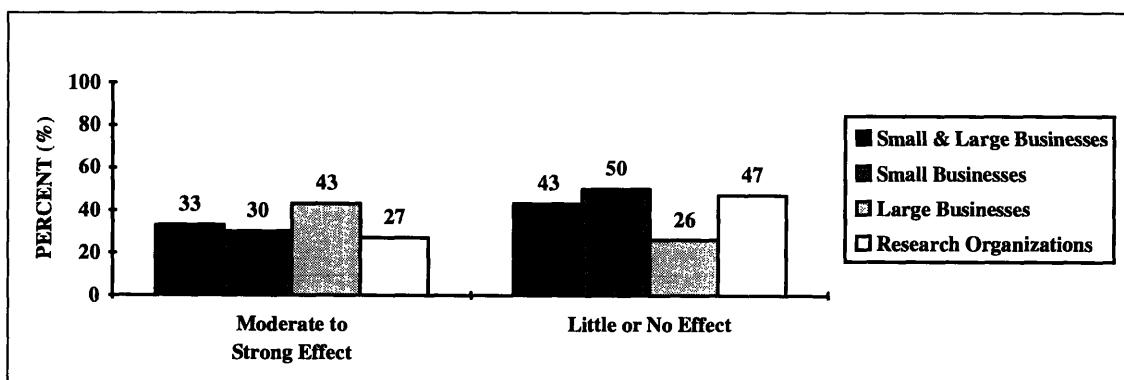


Figure 7. Responses to the question: "How serious of an effect would prior user rights have on your ability to raise capital for R&D or a business start-up?"

The previous two figures indicate that the respondents were quite divided on how seriously prior user rights would affect their usage of trade secrets and their ability to raise capital.

On the contrary, the following figure indicates quite clearly that the respondents felt that exclusivity of patent rights is very important to their businesses. Since prior user rights would detract from the exclusivity of patent rights, they would then seriously affect the businesses that consider exclusivity very important.

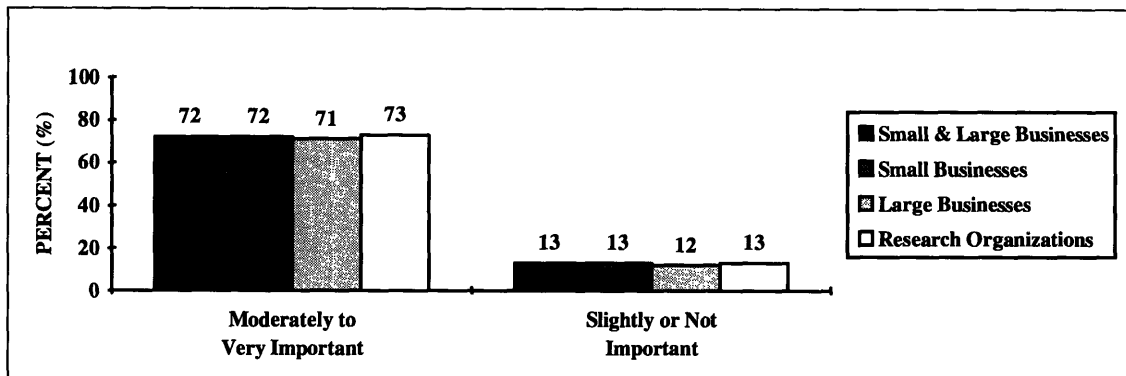


Figure 8. Responses to the question: "How important is the exclusivity of a patent to your operation?"

The next figure shows that the businesses surveyed were divided on how they would react to the incorporation of prior user rights into the patent system.

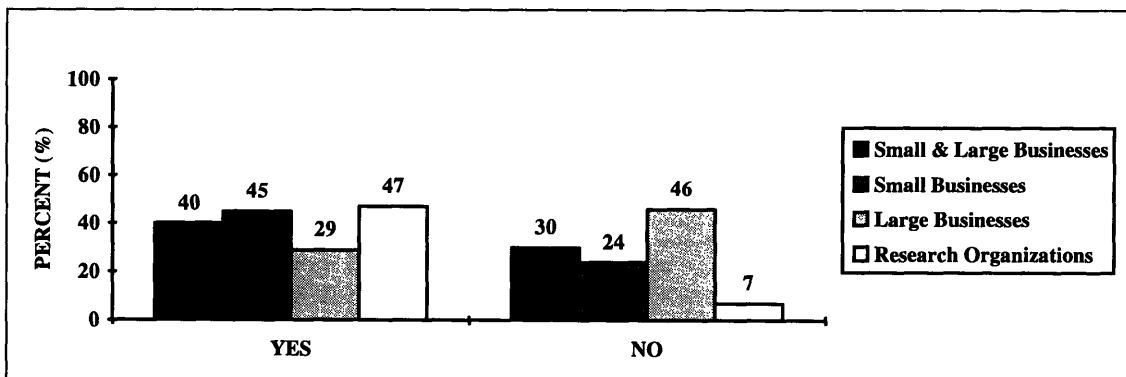


Figure 9. Responses to the question: "Would you or your organization change patenting practices and policies if prior user rights were available under the proposed law?"

5.5 18 Month Publication

Another major change to U.S. patents laws that the harmonization package proposes is changing the time when patent applications are published. Instead of

being published when a patent is granted, an application would be published 18 months after the priority date of filing the application.

The following two figures show the reactions of inventors to such a change. Inventors are almost evenly divided on whether publication in 18 months would affect their business. Along the same trend, a slightly larger percentage of inventors would not change their patenting procedures if the 18 month publication rule was adopted. Thus, inventors are almost evenly split in their opinions of whether publication after a set period would be advantageous.

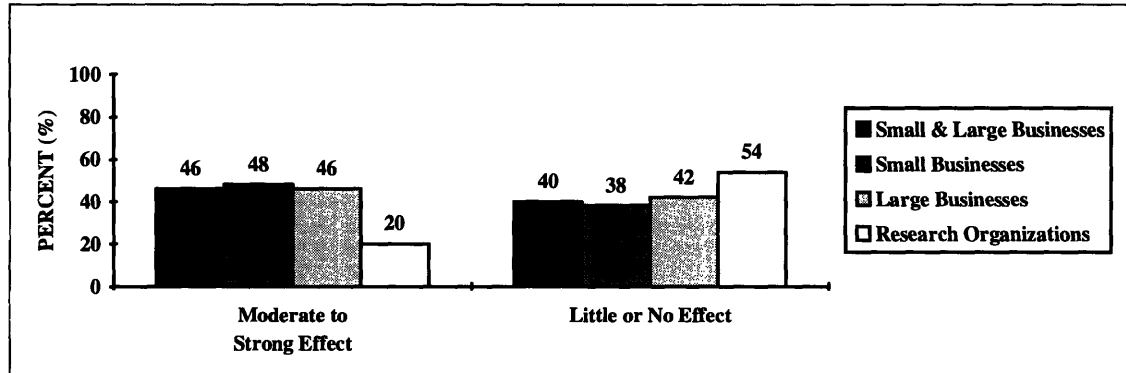


Figure 10. Responses to the question: "Would publication of pending applications 18 months from their filing dates seriously affect your business?"

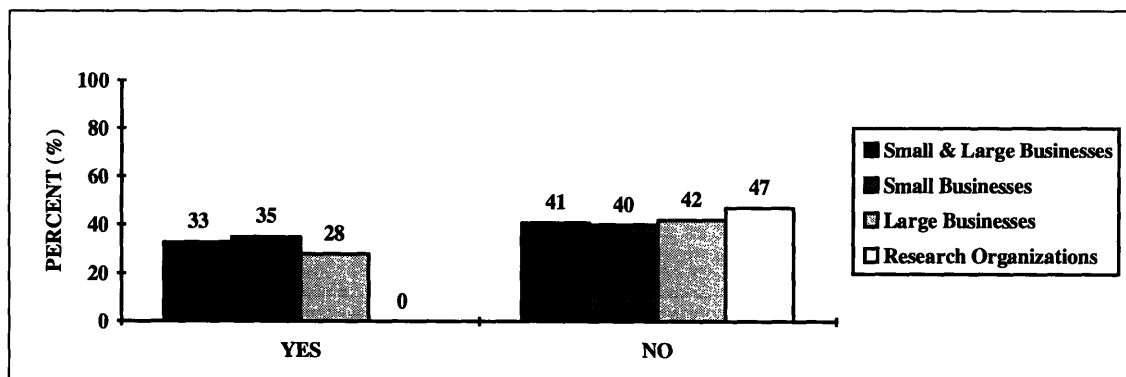


Figure 11. Responses to the question: "Would you or your organization change patenting practices and policies based on the knowledge that your application, if still pending, would be published 18 months after it is filed in the U.S.?"

5. 6 New Type of Grace Period

Under the proposed changes to U.S. patent laws, the grace period offered to inventors would only protect an inventor from his own publications up to a year before filing. Third party publications that are published before an inventor files for a patent would then void the patent.

The following two figures show how inventors use the current grace period that protects them from all disclosures of the invention for up to a year before filing. Figure 12 indicates that inventors in large businesses and administrators of research organizations tend to file patents earlier than inventors in small businesses. However, Figure 13 indicates that the same percentage of inventors in both small and large businesses take advantage of the current grace period, but research organizations have a significantly higher percentage of usage than the inventors.

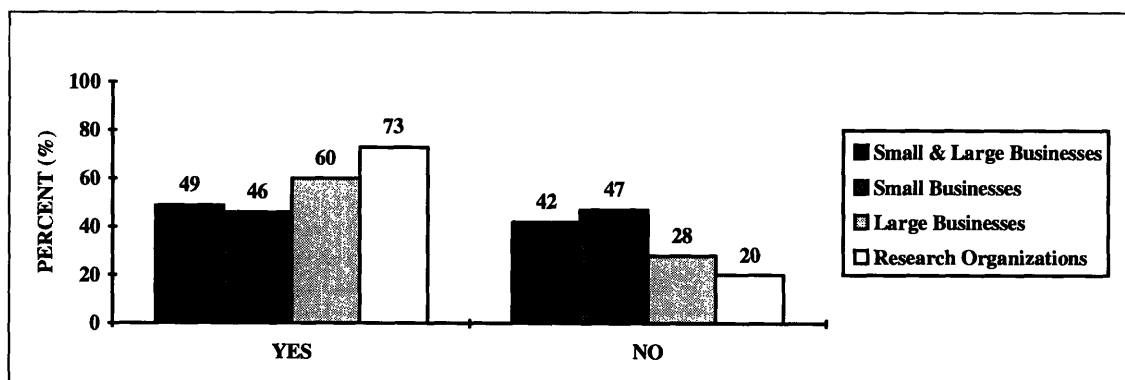


Figure 12. Responses to the question: "Do you or your organization tend to file patent applications before any disclosure (publication, marketing, testing)?"

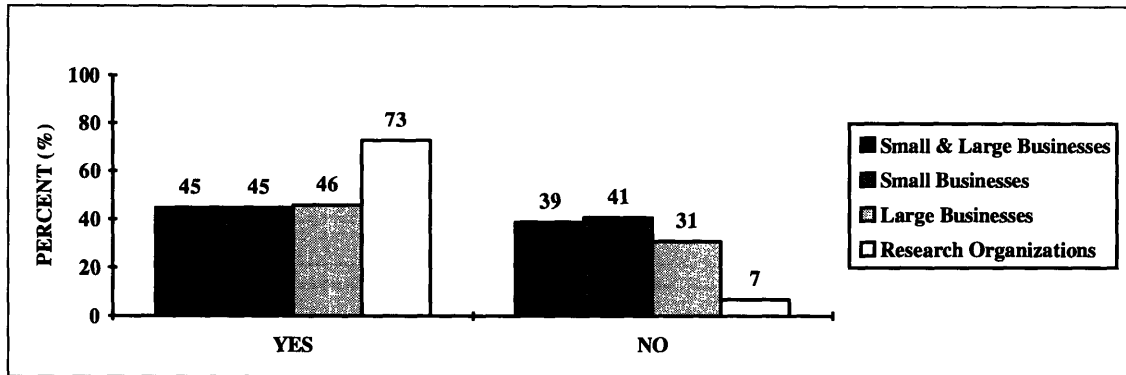


Figure 13. Responses to the question: "Have you or has your organization taken advantage of the current one year grace period?"

Similar to the responses about 18 month publication, inventors are split evenly on whether the new grace period would affect them. Also similarly, a slightly larger percentage of respondents would not change their patenting procedures than would change their procedures if the change in law was implemented.

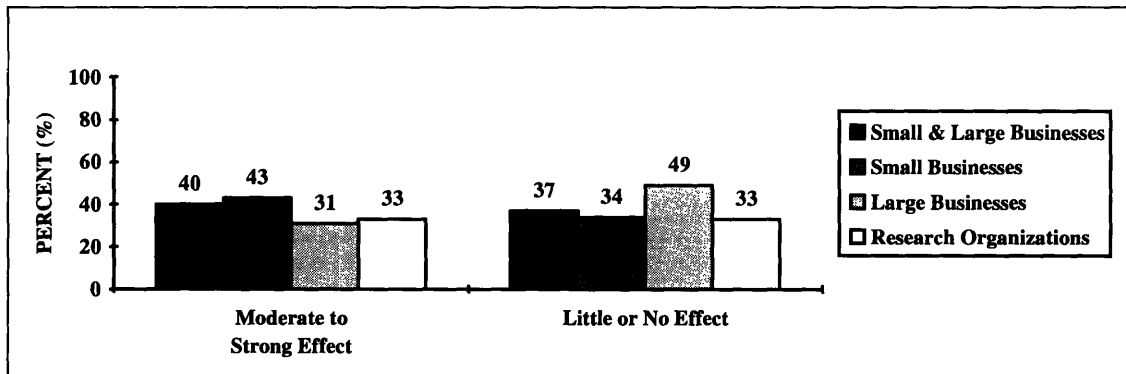


Figure 14. Responses to the question: "If the proposed 'grace period' were adopted in place of the current law, what kind of impact would that have on you or your business?"

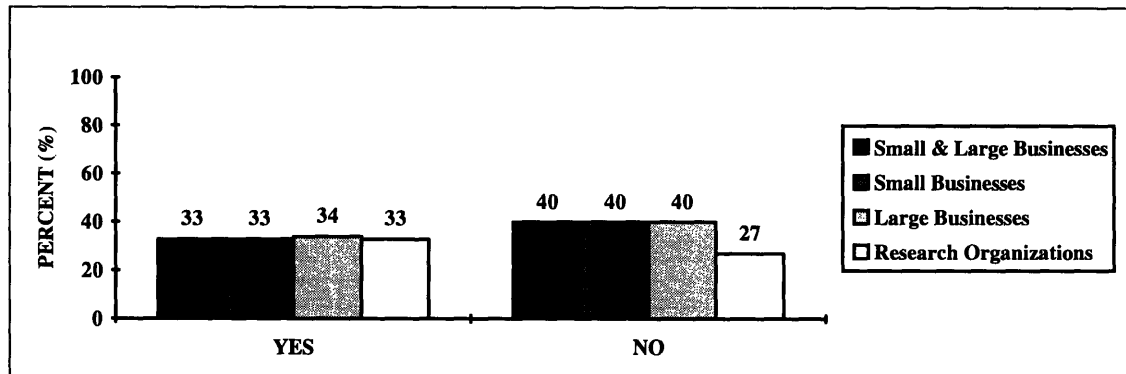


Figure 15. Responses to the question: "Would you or your organization change patenting practices and policies if the proposed change to the grace period were enacted?"

5.7 20 Year Patent Term

Under the proposed harmonization treaty, the U.S. patent term would have to change from a 17 year term that starts when the patent is granted to a 20 year term that starts when a patent application is first filed.

The responses gathered again indicate that inventors are divided between their preferences of the two systems.

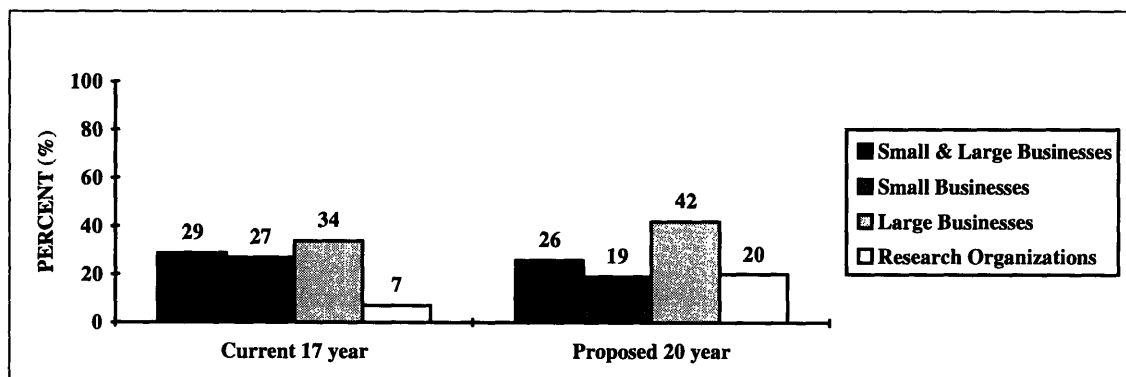


Figure 16. Responses to the question: "Which patent term would you prefer: Current 17 year or Proposed 20 year?"

5.8 Provisional Patent Applications

Though not a highly contested issue of the proposed harmonization treaty because it would be implemented to make the first-to-file system more accessible to all filers, provisional patent applications were covered in the survey to find out how inventors would receive the change. Under the proposed system, in order to simplify and speed up the process of attaining a priority date, there would be a procedure for filing a disclosure of an invention that need only contain a description of the invention. The disclosure, or provisional patent application, would not need to include any claims to identify the scope of protection the inventor expects to seek when filing the actual patent application. Because the provisional application would be much simpler than a full blown patent application, it might be possible for the inventor to file the provisional application without or with little aid from an attorney. In the proposed system, the filing date of the provisional patent would then be the priority date if a standard patent application is filed within one year of filing the provisional patent application.

As Figure 17 shows, practically all the respondents need the assistance of an attorney to file a patent application. Figure 18 also indicates that most respondents felt that they would still need an attorney's assistance in writing just an adequate description of their invention. However, the majority felt that provisional patent applications would be useful and would change to accommodate them, even though most felt that legal counsel would still be needed (see Figure 19 and Figure 20).

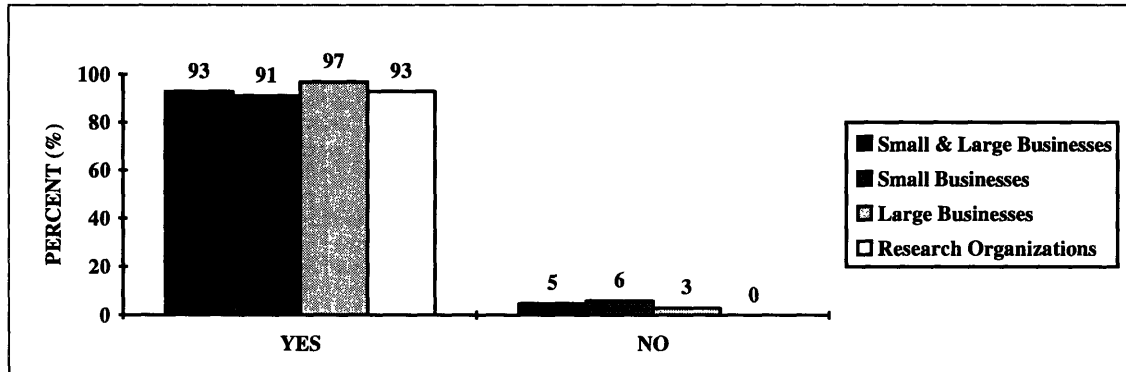


Figure 17. Responses to the question: "Do you or does your organization use an attorney to prepare your patent applications?"

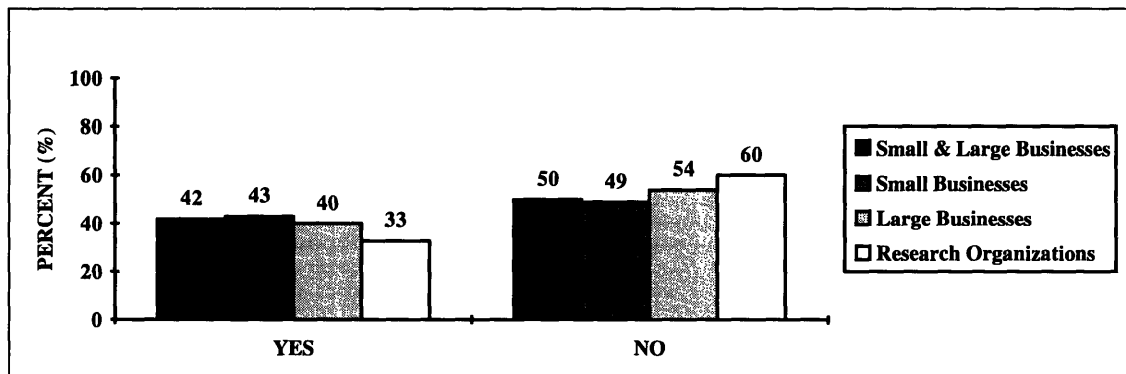


Figure 18. Responses to the question: "Could you write an adequate description of your invention for obtaining patent protection without the aid of an attorney?"

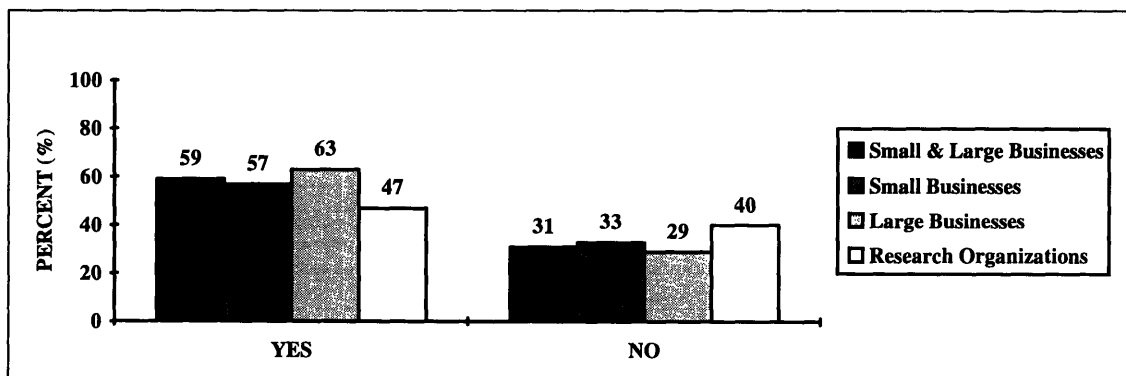


Figure 19. Responses to the question: "Would the provisional patent application be useful to you or your business?"

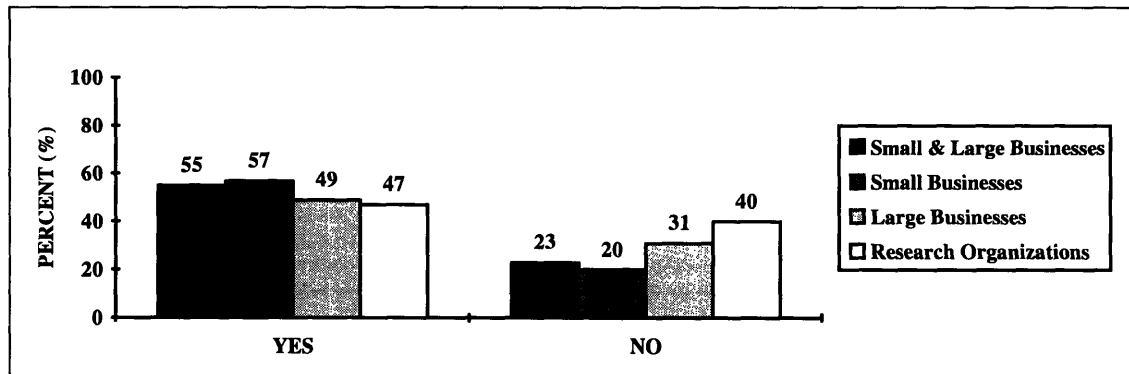


Figure 20. Responses to the question: "Would you or your organization change patenting practices and policies if provisional patent applications were available?"

5.9 Current Problems with the U.S. Patent System

The survey not only covered the major issues of the harmonization proposals, but also covered current issues and problems with the current U.S. patent system. Topics such as interference proceedings, patent processing time, filing fees, quality of patent examiners, access to patent information, and usage of continuation and continuation-in-part applications were included in the survey. However, all of the topics just mentioned, with the exception of continuation and continuation-in-part applications and interference, were only included in the spring 1994 semester questionnaire form. Therefore, the percentages in the following figures that are related to questions that were only on the last semester survey form are not of the total sample used in the previous figures.

5.9.1 Interference Proceedings

Both proponents and opponents of harmonization agree that the complexity of current interference proceedings are a drawback to the first-to-invent priority system. However, the two sides do not agree on what measures should be taken to alleviate interference problems. Proponents of harmonization would argue that switching to a

first-to-file system would be the best solution because interference would be altogether eliminated. On the other hand, opponents of harmonization argue that interferences are not so serious as to require that the current patent system be changed, because very few people are ever involved in interferences and there are ways to make interference proceedings less cumbersome.

The next figure shows the percentage of the people surveyed who have been involved in interference proceedings. Administrators have the highest rate of involvement, which is most likely due to the nature of their work in overseeing the large research organizations in which they work. However, very few inventors have been in an interference.

Figures 21 through 25 indicate that even though very few of the people surveyed have been involved in interference proceedings, a large portion did feel that interference is a serious problem because of its requirements for large expenditures in money and time as well as because of its complexity. In addition, however, many felt that interference does enhance the protection of inventions and felt that they would have to change their patenting procedures if interference were not available.

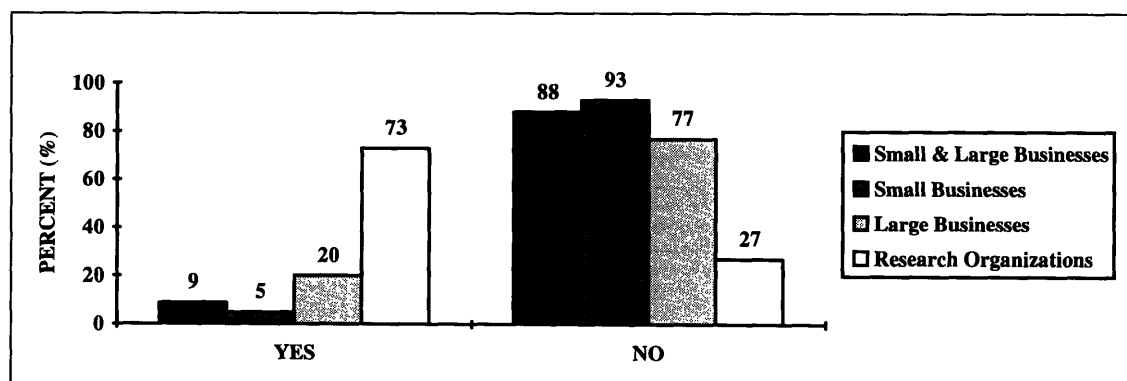


Figure 21. Responses to the question: "Have you ever been involved in an interference?"

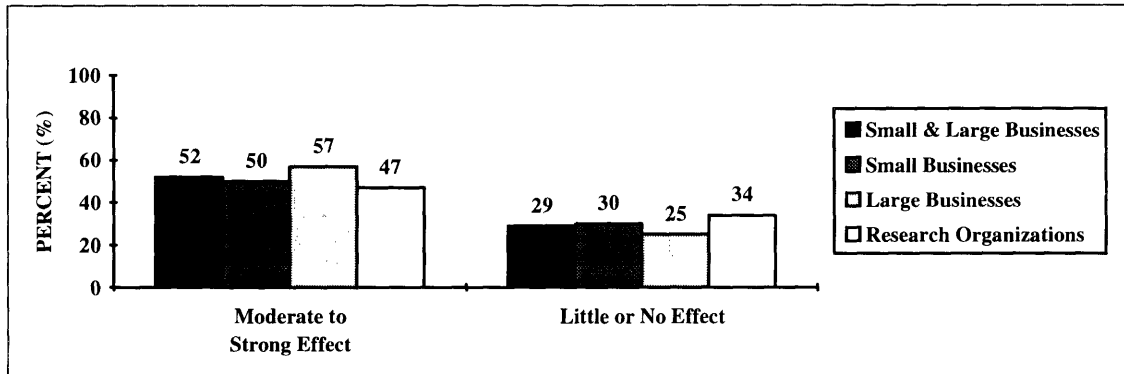


Figure 22. Responses to the question: "How serious of a problem do you consider the current interference practice to be?"

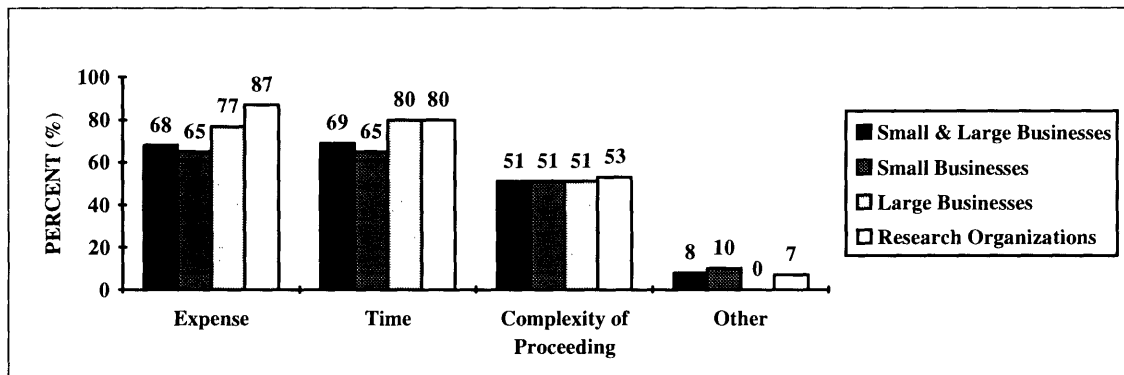


Figure 23. Responses to the question: "What are your concerns about interference proceedings: Expense, Time, Complexity of Proceeding, or Other?"

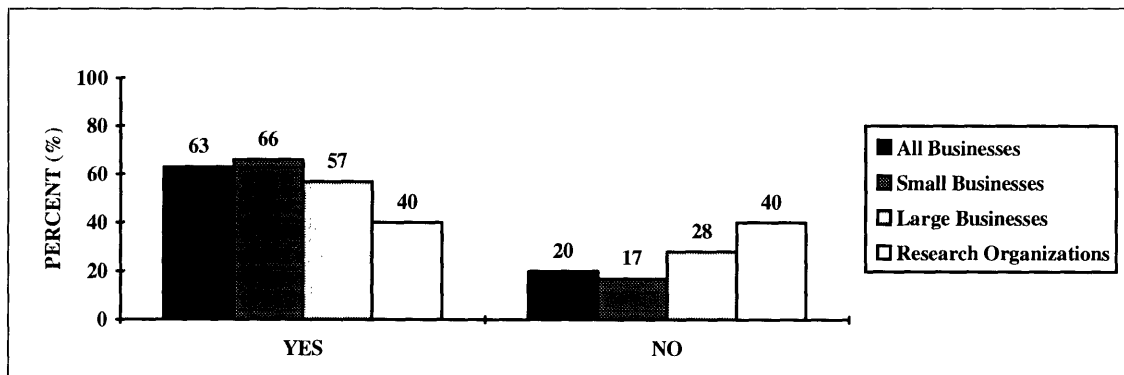


Figure 24. Responses to the question: "Do you believe interference proceedings enhance the protection available to you or your organization's inventions?"

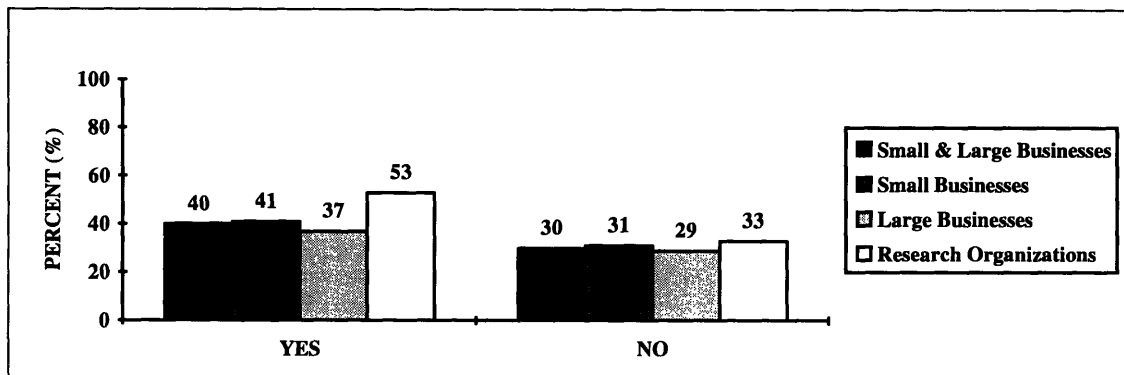


Figure 25. Responses to the question: "Would you or your organization change patenting practices and policies if first-to-file were adopted and interference proceedings were not available?"

The following three figures show the responses to interference related questions that were only included on the last semester questionnaire form. Like the previous figures, they also indicate the dissatisfaction of respondents with the complexity of interference proceedings. Figure 26 shows that a large majority of respondents would like the interference proceedings simplified by making use of affidavits. Figure 27 shows that the majority of inventors did not consider the elimination of interference problems a sound justification for adopting a first-to-file system. However, most administrators felt that elimination of interference would be a good justification for switching to a first-to-file system.

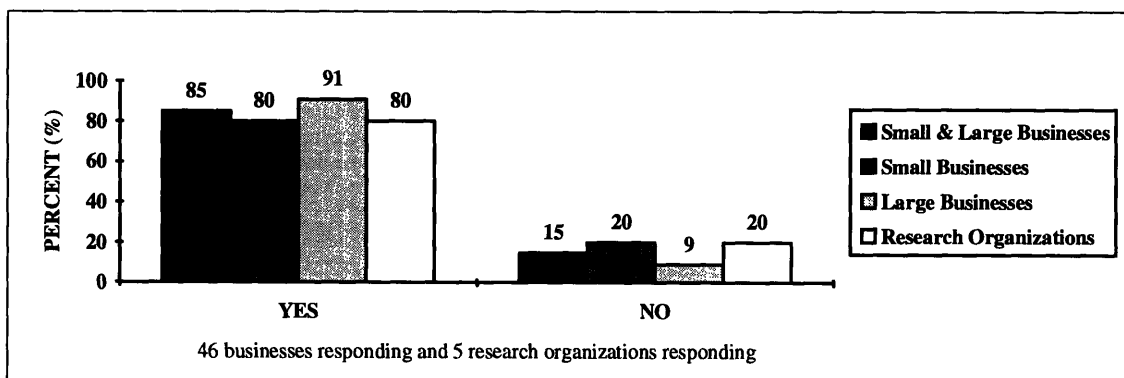


Figure 26. Responses to the question: "Do interference proceedings need to be improved?"

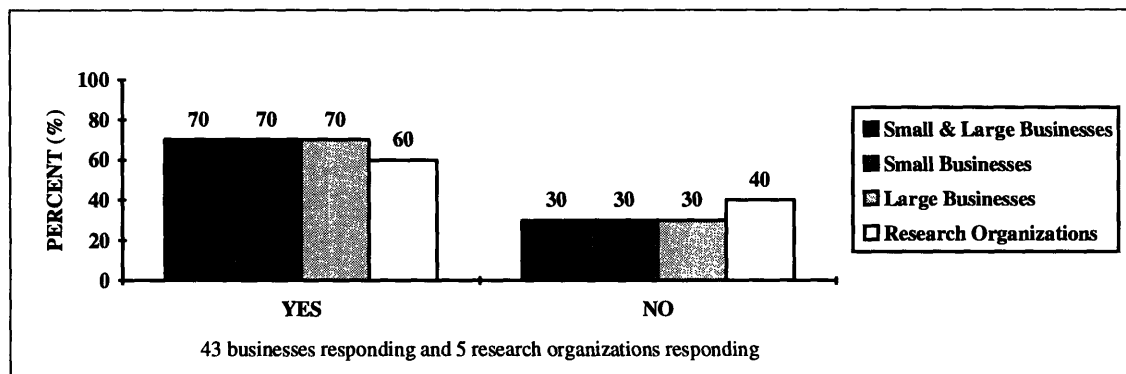


Figure 27. Responses to the question: "Would filing affidavits instead of following full legal disclosure procedures help the interference proceedings?"

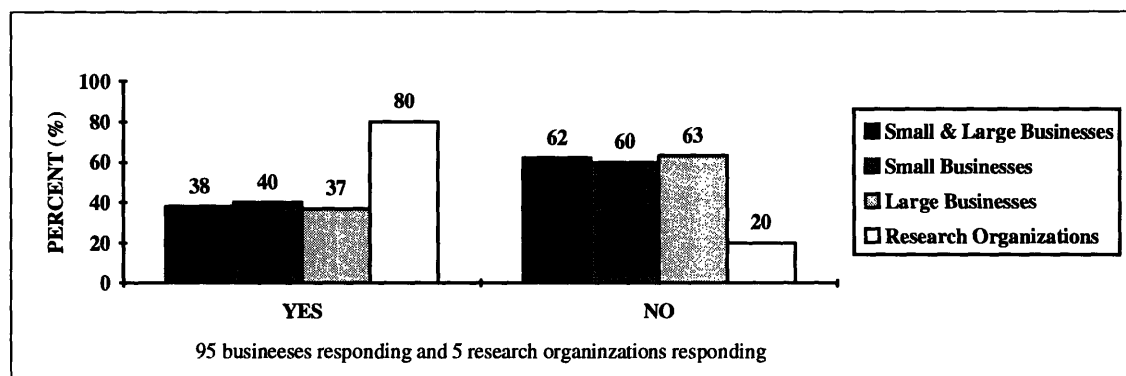


Figure 28. Responses to the question: "Would elimination of interference proceedings be a good reason to change over to the first-to-file system?"

5.9.2 Patent Application Processing Time

Along with interference, processing time for patent applications is another area of dissatisfaction for people who use the patent system. Figures 29 and 30 indicate that there is a high rate of dissatisfaction with application processing time, with most responses indicating that a processing time of less than one year would be desirable. Figure 31 shows that respondents are in favor of the development of the automated electronic patent search database that the Patent Office is currently undertaking.

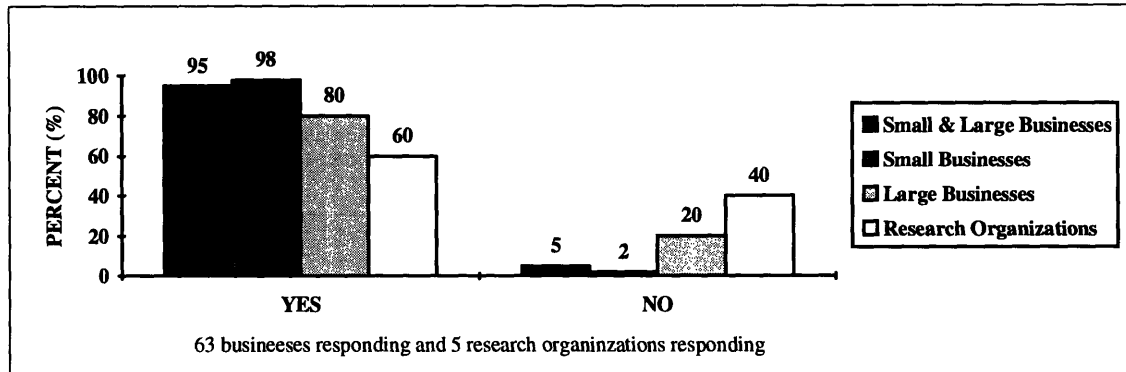


Figure 29. Responses to the question: "Does the application processing time for patents need to be improved?"

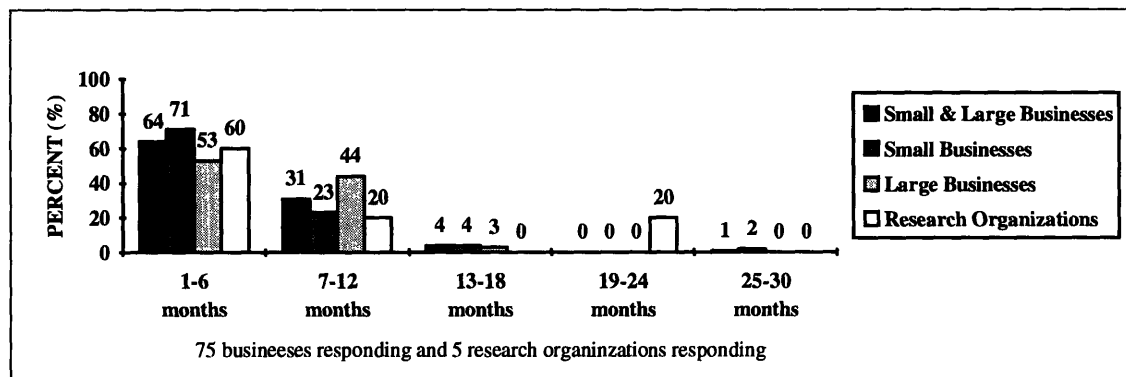


Figure 30. Responses to the question: "What would you consider a good processing time for patent applications?"

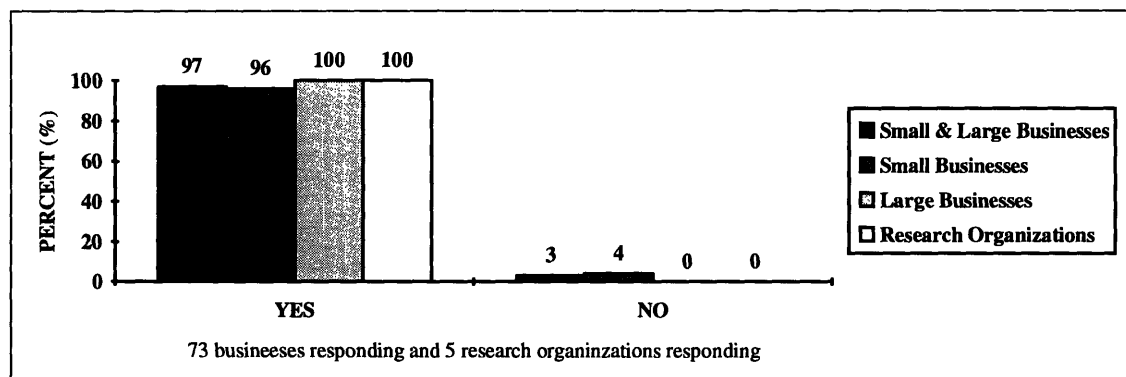


Figure 31. Responses to the question: "Is the development of a electronic patent search database a worthy expenditure for the Patent Office?"

5.9.3 Filing Fees

Filing fees for patents are also an issue that concerns inventors. The next three figures show that inventors are evenly split on whether filing fees in the U.S. are too high, but feel that U.S. fees are more fair than those of Europe and Japan.

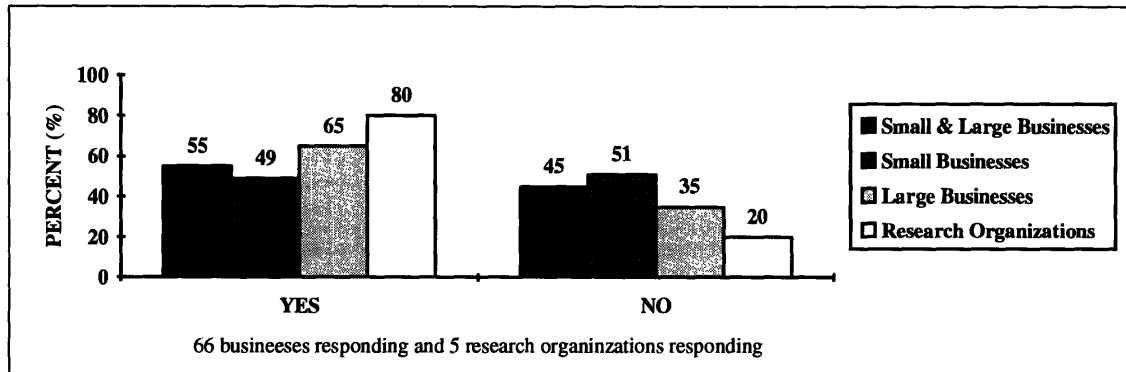


Figure 32. Responses to the question: "Are U.S. filing fees too high now?"

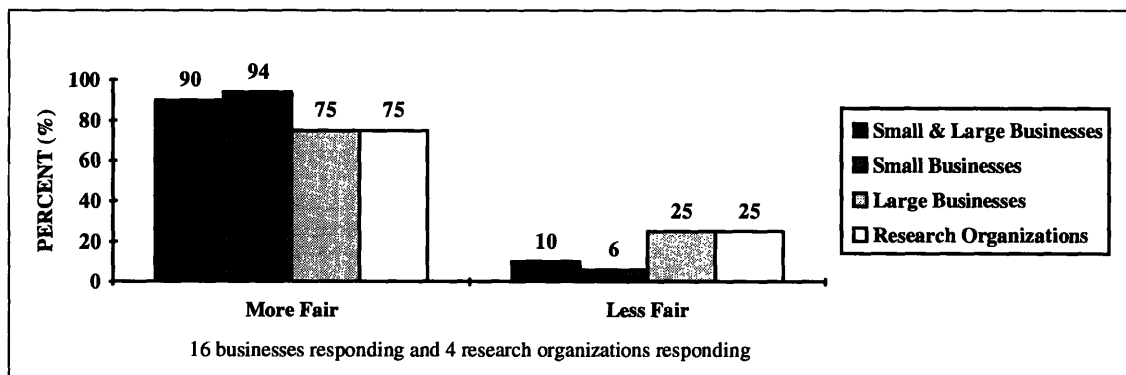


Figure 33. Responses to the question: "How does the cost of filing patents in the U.S. compare to the cost of filing patents in Europe?"

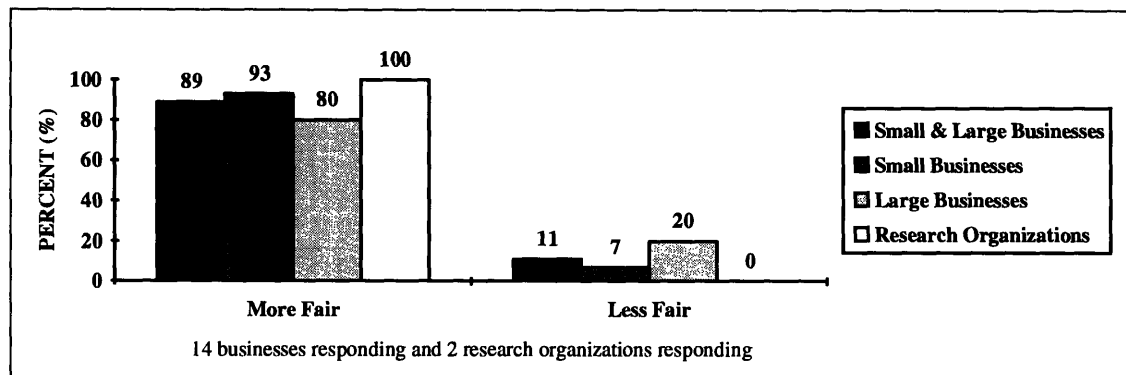


Figure 34. Responses to the question: "How does the cost of filing patents in the U.S. compare to the cost of filing patents in Japan?"

5.9.4 Quality of Patent Examiners

Quality of the examiners in the USPTO is another issue of concern for the inventive community. Figure 35 shows that over three quarters of the respondents felt that the quality of patent examiners was not satisfactory.

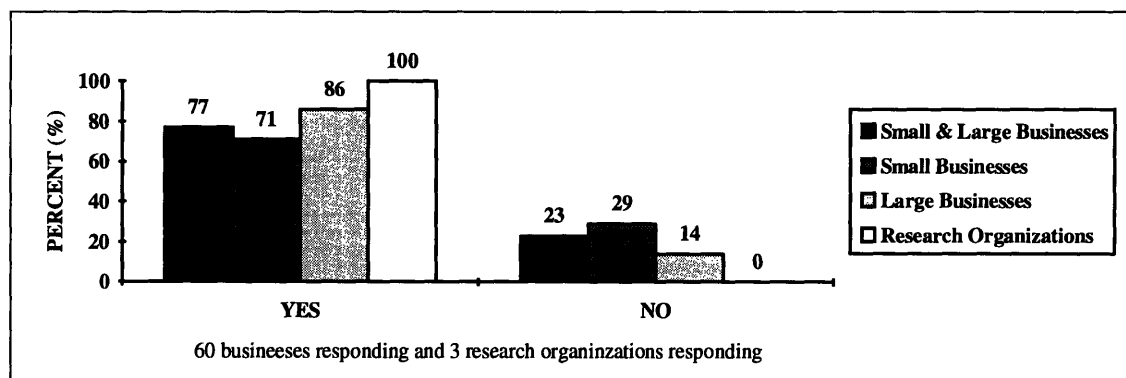


Figure 35. Responses to the question: "Is the quality of U.S. patent examiners in need of improvement?"

5.9.5 Access to Patent Information

Easy public access to patent information is essential to high tech businesses or any businesses that deal in a field where patents are used. Currently, USPTO text information is only available in an electronic format over expensive databases such as

LEXIS®/NEXIS®. Figures 36 and 37 indicate that respondents want easier and less expensive access to patent office information.

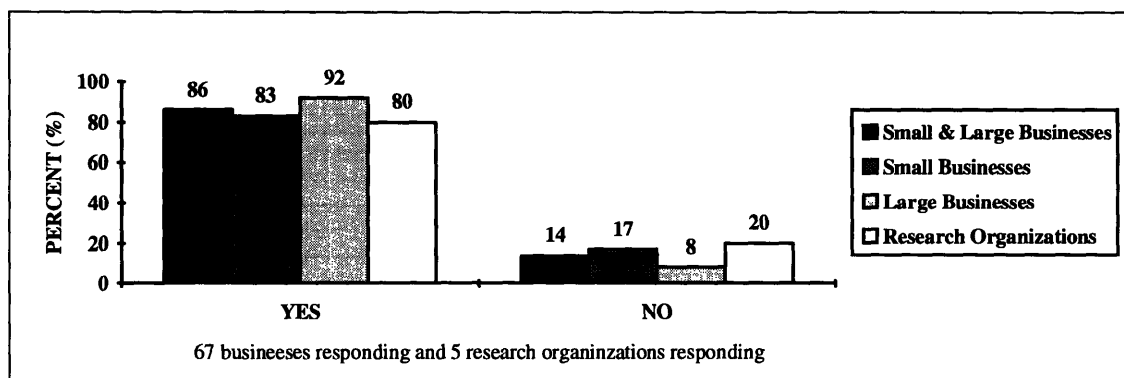


Figure 36. Responses to the question: "Is access to patent information in need of improvement?"

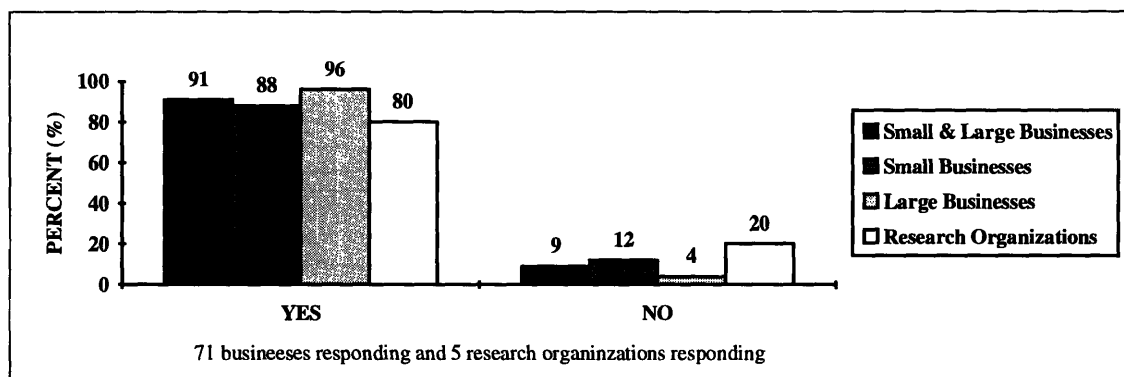


Figure 37. Responses to the question: "Would having public free or low cost access to all of the U.S. Patent Office text information improve the system?"

5.9.6 Continuation and Continuation-In-Part Applications

A common practice in the U.S. Patent and Trademark Office is to issue a final rejection of an application as the Office's second action. This means that any amendments or arguments that an applicant wishes to make after the final rejection are not entered as a matter of right, but rather at the discretion of the Office. An applicant may, under the current law, appeal the decision to the Board of Patent Appeals and Interferences. Alternatively, an applicant may re-file the application

as a continuation application, effectively recycling the application for the cost of filing a new application. This continuation application maintains the original, or parent, application's filing date, and allows entry of an amendment or further argument as a matter of right. A continuation-in-part application is filed when additional, related information that is desired to be added to a previously filed application on the same invention. This tool is used, amongst other reasons, when new information that was not available at the original filing becomes available. Although the added information receives only the benefit of the date of filing of the continuation-in-part application, the portion of the application corresponding to the parent application does receive the benefit of the original, parent application filing date.

Approximately a third of the inventors surveyed have used continuations, and about the same percentage of inventors found continuations to be useful (see Figures 38 and 39). On the other hand, about two thirds of administrators in research organizations have used continuations, and about the same fraction of the research organizations found continuations to be useful (see Figures 38 and 39).

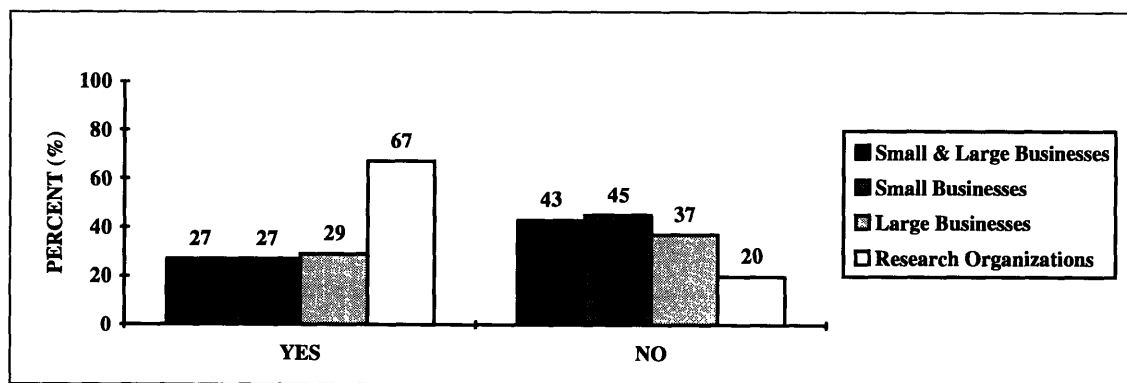


Figure 38. Responses to the question: "Have you used continuation or continuation-in-part applications?"

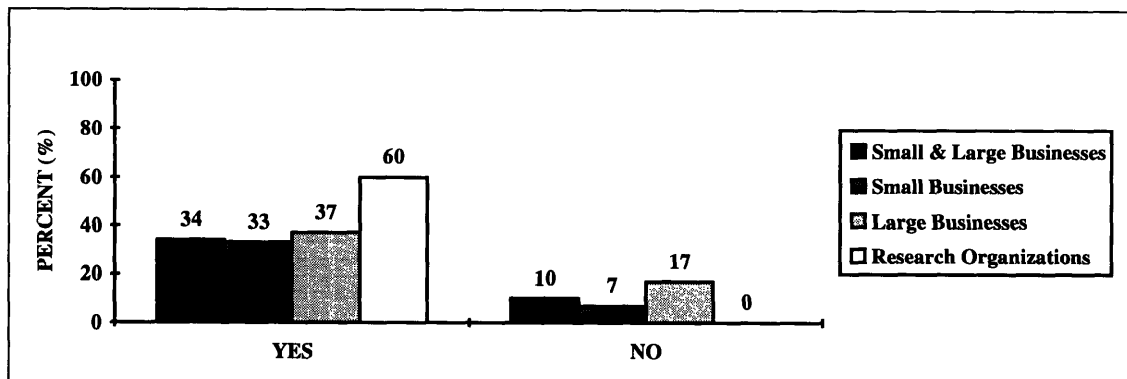


Figure 39. Responses to the question: "Are continuation and continuation-in-part applications useful?"

5.10 Conclusions

The results of the survey indicate that U.S. inventors in all but one of the harmonization issues surveyed either greatly preferred the patenting rules of the current U.S. system, or had no preference on certain proposed changes.

The results of the survey on the main topics of the patent harmonization package are summarized below.

First-to-File

- 74% of inventors prefer the current U.S. first-to-invent system over the first-to-file harmonization proposal.
- 12% of inventors prefer the first-to-file harmonization proposal over the current U.S. first-to-invent system.

Prior User Rights

- 56% of inventors responded that prior user rights would make them less willing to seek patent protection.
- 22% of inventors responded that prior user rights would not affect their willingness to seek patent protection.

18 Month Publication

- 46% of inventors answered that publication of patent applications

18 months from their filing dates would seriously affect their businesses.

- 40% of inventors answered that publication of patent applications 18 months from their filing dates would not affect their businesses.

Grace Period

- 40% of inventors responded that the proposed grace period would have a serious impact on their business.
- 37% of inventors responded that the proposed grace period would not have a serious impact on their business.

20 Year Patent Term

- 29% of inventors prefer the current 17 year patent term.
- 26% of inventors prefer the proposed 20 year patent term.

Provisional Patent Applications

- 59% of inventors considered provisional patent applications useful to their businesses.
- 31% of inventors did not consider provisional patent applications useful to their businesses.

As the results of the survey indicate, inventors, in general, do not prefer the proposed changes to the U.S. patent system over the current system. A great majority of inventors do not favor first-to-file or prior user rights. Inventors are split on their support for the 18 month publication proposal, the proposed grace period, and the 20 year patent term. The only harmonization proposal that they supported is the usage of provisional patent applications. Thus, the harmonization package as a whole does not receive the endorsement of the inventive community.

The survey also covered some areas of the current U.S. patent system that is of concern to the inventive community. Topics such as interference proceedings, patent

application processing time, filing fees, quality of patent examiners, access to patent information, and continuation and continuation-in-part applications were addressed.

The results of the survey are summarized below.

Interference Proceedings

- 52% of inventors felt the complexity of the interference practice to be a serious problem.
- 85% of inventors felt that interference proceedings need to be improved.
- 70% of inventors felt that filing affidavits would improve interference proceedings.
- 62% of inventors did not consider the elimination of interference proceedings a good enough reason to change to a first-to-file system.

Patent Application Processing Time

- 95% of inventors responded that patent application processing time needed improvement.
- 95% of inventors preferred to have a processing time under 12 months.

Filing Fees

- 55% of inventors felt that U.S. filing fees are too high.

Quality of Patent Examiners

- 77% of inventors were not satisfied with the quality of patent examiners.

Access to Patent Information

- 86% of inventors wanted access to patent information improved.

Continuation and Continuation-in-Part Applications

- 34% of inventors found continuation and continuation-in-part useful as opposed to 10% who did not find continuation and continuation-in-part useful.

Thus, there are many areas in which inventors feel that the current U.S. patent needs to be improved. The areas of interference, patent processing time, quality of patent examiners, and access to patent information were of great dissatisfaction to the large majority of inventors. However, inventors were satisfied with continuation and continuation-in-part applications.

Even though inventors were dissatisfied with the above mentioned areas of the patent system, it should be noted that the majority of inventors still did not support the changes proposed in the harmonization package.

CHAPTER 6

Comparing the Results of the Survey of Inventors to the Results of the Small Business Administration's Survey of Small Businesses

In 1991, the Office of Advocacy of the United States Small Business Administration (SBA) published the results of their study of how businesses in the United States use Intellectual Property Protection.⁴⁸ Survey forms were mailed to a random sample of 1,054 firms in the Corporate Technology Directory. Responses to the SBA survey were received from 322 enterprises with fewer than 500 employees and 54 enterprises with 500 or more employees. Because the sample was stratified by industry, they weighted their results by the populations of the individual industries.

In order to determine if the results of the SBA survey agreed with those of the survey conducted by M.I.T., responses from both surveys were compared. However, in order to compare the results, the raw data from the SBA's survey had to be obtained and re-tabulated. The only portion of the SBA and M.I.T. data used in the following comparison was the responses from firms with 50 or less employees. Unlike the M.I.T. survey that requested the responses of inventors in the firms surveyed, the SBA survey did not ask for inventor input. Thus, the SBA responses are most probably those of managers or administrators in the firms. However, in small businesses (those with 50 or less employees) the managers or administrators are often also inventors. For instance, many of the inventors in small businesses surveyed by M.I.T. were also

⁴⁸Koen, Mary Seyer, Survey of Small Business Use of Intellectual Property Protection: Report of a Survey Conducted by MO-SCI Corporation for the Small Business Administration (Rolla, Missouri, MO-SCI Corporation, 1991).

part of the top management of the company, especially when the companies were a recent start-up and had very few employees. Therefore, the responses of the M.I.T. survey of small businesses (50 or less employees) can be compared to the responses of the SBA's survey of the same sized businesses.

Since the two surveys were conducted independently of each other, only some of the questions in the surveys were similar enough to warrant comparison of the results. Responses to questions on topics such as first-to-file, provisional patents, publication, application processing time, and filing fees from the two surveys are compared in this chapter.

6.1 Demographics

The following two tables show the demographics of both the M.I.T. and SBA respondents. The SBA received over double the number of responses than M.I.T. received. The respondents to the M.I.T. survey were concentrated in the fields of computers, electronics, and mechanical industries, but the respondents in the SBA survey were stratified over almost all the indicated fields.

Table 10. Demographics of the M.I.T. and SBA surveys.

	M.I.T.	SBA
Number of Surveys Returned	94	232
Average Number of U.S. Patents Held per Business	4.9	2.9
Average Number of Foreign Patents Held per Business	1.7	2.9

Table 11. Breakdown of M.I.T. and SBA respondents by field.

M.I.T.		SBA	
FIELD	(%)	FIELD	(%)
biology	7	automation	3
chemistry	13	biotechnology	13
computers	37	chemicals	9
electronics	38	computers	4
physics	18	defense	2
mechanical	33	energy	3
other	26	adv. materials	5
		medical	13
		pharmaceuticals	6
		photo. & optics	3
		software	13
		components	7
		test & measure.	12
		telecommun.	5
		transportation	0

6.2 First-To-File

Concerning the first-to-file issue, responses from both the M.I.T. and SBA surveys indicate that the great majority of inventors and small businesses do not want a change in the priority awarding system for patents (see Figure 40). In the survey done by M.I.T., inventors were asked whether they preferred the current patent system that uses first-to-invent criteria for determining priority or the harmonization proposal that would use first-to-file criteria. Over 80 percent responded that they prefer the current first-to-invent system. In comparison, the SBA survey asked whether businesses felt that the U.S. patent system should be changed from first-to-invent to first-to-file. Responses sent to the SBA indicated that 65% of the businesses felt that the patent system should not be changed to first-to-file. Clearly, results from both

surveys indicate that businesses with 50 or less employees greatly prefer the first-to-invent system.

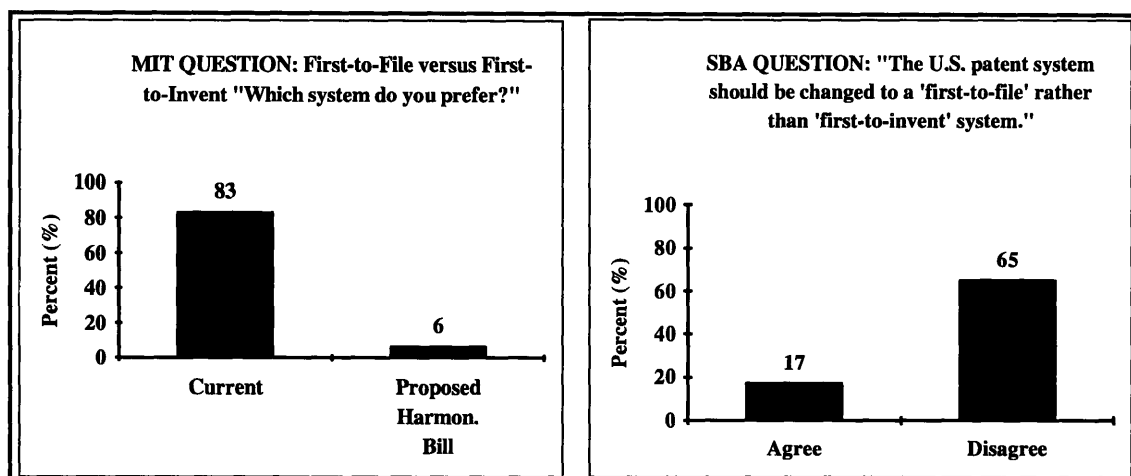


Figure 40. Responses to questions concerning first-to-file in the MIT and SBA surveys.

6.3 18 Month Publication

Another harmonization proposal is to require that patent applications be published at a set time from the filing date. 18 months is the waiting time before publishing that is being promoted. In the U.S., patents often take longer than 18 months to be granted. Thus, the 18 month publication rule would, in effect, be requiring publication of patent applications preceding issuance.

Both survey results suggest that slightly more businesses did not want 18 month publication than did (see Figure 41).

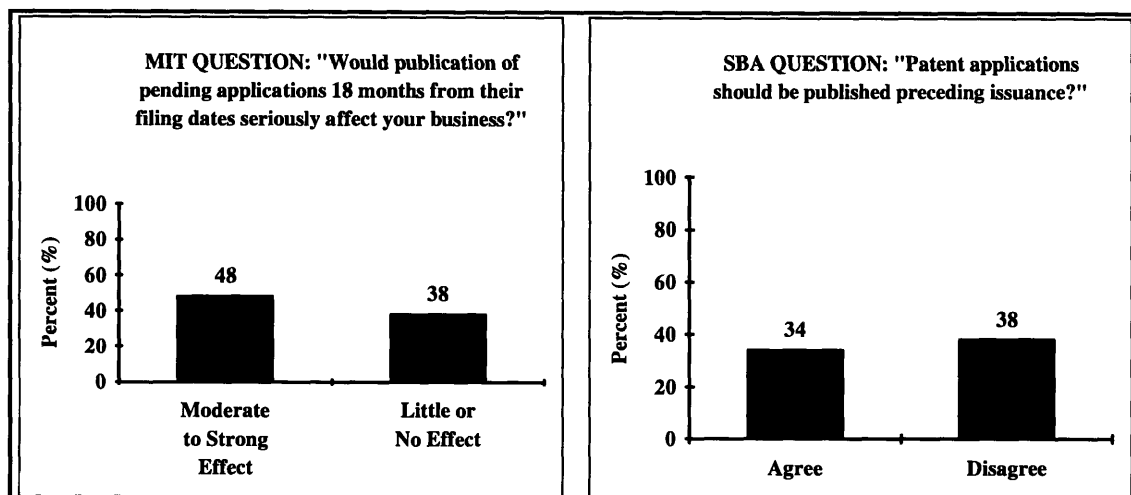


Figure 41. Responses to questions concerning publication of patent applications in the M.I.T. and SBA surveys.

6.4 20 Year Patent Term

Responses to the M.I.T. survey show, that inventors would rather have a patent term that was 17 years long and started at the date of issuance rather than a 20 year term that started at the filing date. The SBA survey indicates a trend that the longer the patent term from the date of issuance, the greater the support from businesses. Thus, businesses not only slightly prefer a 17 year term beginning at issuance of the patent, but would even like to see the protection period lengthened.

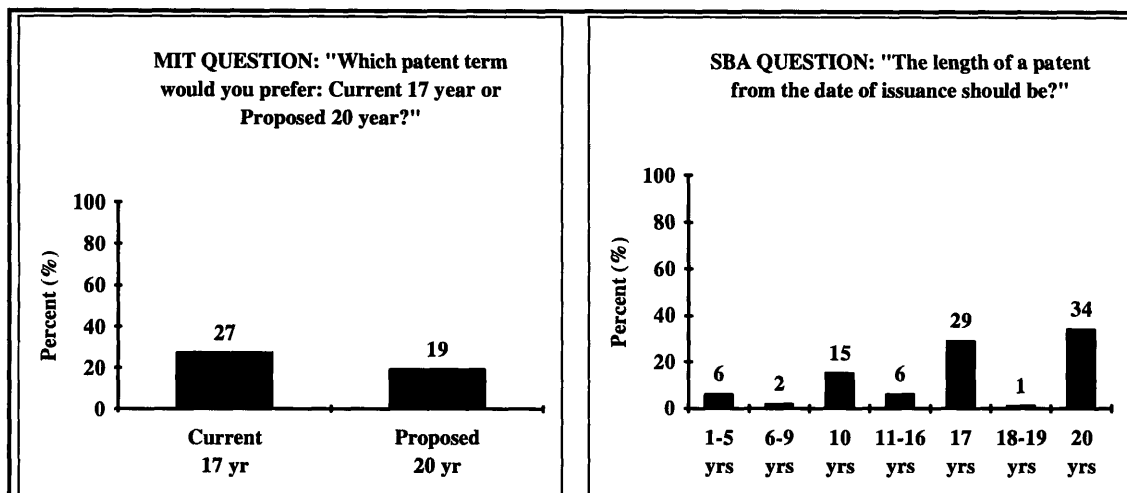


Figure 42. Responses to questions concerning length of patent terms in the M.I.T. and SBA surveys.

6.5 Provisional Patents

Concerning the issue of provisional patents, questions were asked in both the M.I.T. and SBA survey about the feasibility of patentees using the proposed simple disclosure application. Since the merit of provisional patent application lies in its simplicity for patentees to file with minimal legal assistance, it is useful to determine to what extent patentees need to use legal counsel. Results from both surveys show that very few businesses do not require legal assistance for filing patents (see Figure 43).

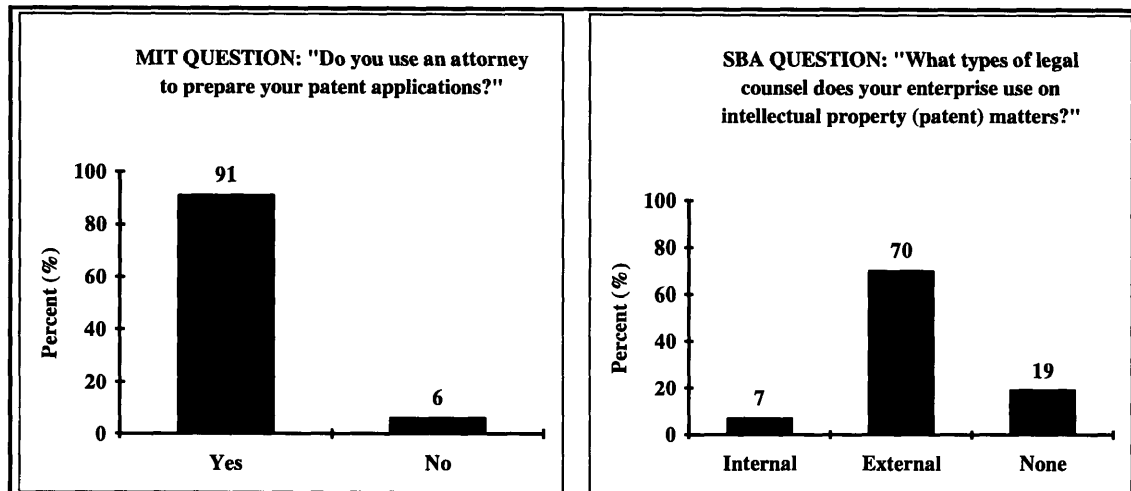


Figure 43. Responses to questions concerning usage of patent counsel in the M.I.T. and SBA surveys.

6.6 Patent Application Processing Time

Survey responses indicate that the majority of respondents from both studies prefer to have a processing time for patent applications that is less than one year.

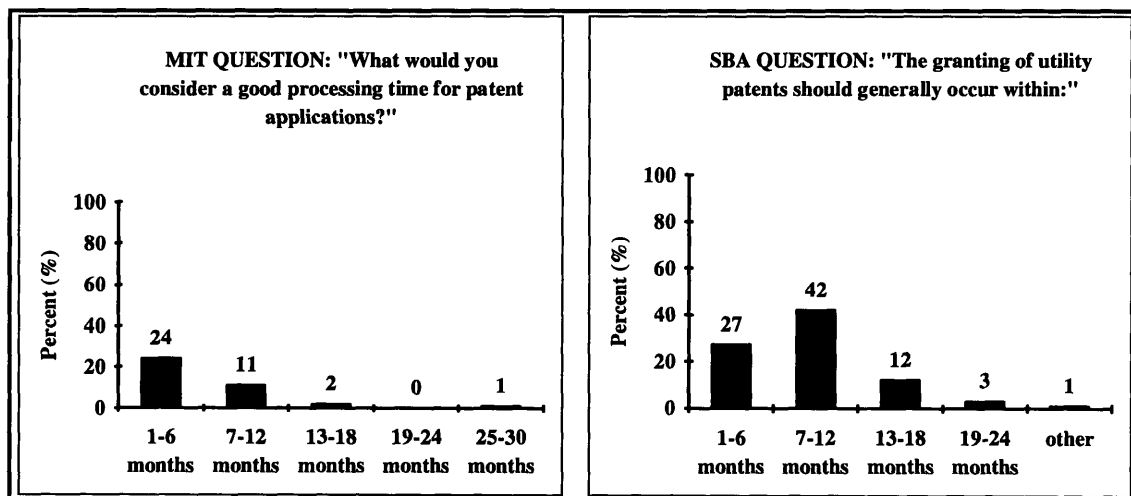


Figure 44. Responses to questions concerning patent application processing time in the M.I.T. and SBA surveys.

6.7 Conclusions

Results from the M.I.T. and SBA surveys of businesses with 50 or less employees agree on the topics of first-to-file, 18 month publication, length of patent terms, provisional patent applications, and patent application processing time. Thus, even though the M.I.T. sample was not as stratified over fields of technology as the SBA survey was and though the M.I.T. sample was not a random one taken from an independent source, the M.I.T. survey results follow the same trends as the SBA survey.

CHAPTER 7

Conclusions and Recommendations

The results of the survey of inventors in various sized businesses indicate that inventors do not support the changes to patent laws that are proposed by the WIPO Draft Patent Harmonization Treaty or related bills introduced in the U.S. Congress to implement the WIPO harmonization proposals. Not one of the changes proffered by the international harmonization negotiations concerning the important areas of priority systems, exclusivity, publication, grace periods, length of patent protection, and adjustments to the application process received overwhelming support or approval of inventors. A summary of the survey answers given by inventors are given below.

First-to-File

- 74% of inventors prefer the current U.S. first-to-invent system over the first-to-file harmonization proposal.
- 12% of inventors prefer the first-to-file harmonization proposal over the current U.S. first-to-invent system.

Prior User Rights

- 56% of inventors responded that prior user rights would make them less willing to seek patent protection.
- 22% of inventors responded that prior user rights would not affect their willingness to seek patent protection.

18 Month Publication

- 46% of inventors answered that publication of patent applications 18 months from their filing dates would seriously affect their

businesses.

- 40% of inventors answered that publication of patent applications 18 months from their filing dates would have not affect their businesses.

Grace Period

- 40% of inventors responded that the proposed grace period would have a serious impact on their business.
- 37% of inventors responded that the proposed grace period would not have a serious impact on their business.

20 Year Patent Term

- 29% of inventors prefer the current 17 year patent term.
- 26% of inventors prefer the proposed 20 year patent term.

Provisional Patent Applications

- 59% of inventors considered provisional patent applications useful to their businesses.
- 31% of inventors did not consider provisional patent applications useful to their businesses.

As the results of the survey indicate, inventors, in general, do not prefer the proposed changes to the U.S. patent system over the current system. A great majority of inventors do not favor first-to-file or prior user rights. Inventors are split on their support for the 18 month publication proposal, the proposed grace period, and the 20 year patent term. The only harmonization proposal that they supported is the usage of provisional patent applications. Thus, the harmonization package as a whole does not receive the endorsement of the inventive community.

The survey also covered other areas of the U.S. patent system. Topics such as simplified interference proceedings, patent application processing time, filing fees,

quality of patent examiners, access to patent information, and continuation and continuation-in-part applications were addressed. The results of the survey are summarized below.

Interference Proceedings

- 52% of inventors felt the complexity of the interference practice to be a serious problem.
- 85% of inventors felt that interference proceedings need to be improved.
- 70% of inventors felt that filing affidavits would improve interference proceedings.
- 62% of inventors did not consider the elimination of interference proceedings a good enough reason to change to a first-to-file system.

Patent Application Processing Time

- 95% of inventors responded that patent application processing time needed improvement.
- 95% of inventor preferred to have a processing time under 12 months.

Filing Fees

- 55% of inventors felt that U.S. filing fees are too high.

Quality of Patent Examiners

- 77% of inventors were not satisfied with the quality of patent examiners.

Access to Patent Information

- 86% of inventors wanted access to patent information improved.

Continuation and Continuation-in-Part Applications

- 34% of inventors found continuation and continuation-in-part useful as opposed to 10% who did not find continuation and continuation-in-part useful.

Thus, there are many areas in which inventors feel that the current U.S. patent needs to be improved. The areas of interference, patent processing time, quality of patent examiners, and access to patent information were of great dissatisfaction to the large majority of inventors.

Results of from the survey were compared to results from a Small Business Administration survey conducted several years ago. It was found that both surveys had similar trends in responses for overlapping questions.

Recommendation

Instead of changing the U.S. system for the sole purpose of harmonizing with the rest of the world, changes to the patent system should at least improve some of the areas of that are sources of discontent to users of the system. The proposed harmonization changes do not address the problems with current lengthy patent processing time, high filing fees, lack of quality of patent examiners or even the difficulties in accessing patent information. These are the some areas that the U.S. system needs to have improved, yet harmonization would not lead to any advancement in these areas. In conclusion, harmonization proposals do not have the approval of the inventive community and do not solve many of the current problems with the patent system.

APPENDIX A: Survey Form Used in 1993

The basic survey form developed for and used by the 1993 fall semester 6.901 class and also mailed out to the New England Association of Independent Inventors, as well as the faculty at the Massachusetts Institute of Technology during the fall of 1993 to solicit the viewpoints of independent inventors as well as inventors in businesses is reproduced below. In the form, a brief explanation of the different aspects of patent law changes proposed for harmonization accompanied each topic included in the survey. The explanations were attached because experience from interviewing independent inventors in the spring semester of 1993 showed that most inventors were not familiar with many of the areas that the questions pertained to.

**SURVEY OF INDEPENDENT INVENTORS VIEWS OF THE PATENT SYSTEM
HARMONIZATION ACT**

In early 1994, Sen. Dennis DeConcini, D-Ariz., and Rep. William J. Hughes, D-N.J. will be trying to re-introduce the Patent System Harmonization Act. If passed, patent protection would no longer be granted to the first person to invent, but would be granted to the first person to file a patent application, regardless of who conceived the invention first. The proposed bill, if passed, would change the U.S. patent system so that it will be more like those of other nations. Though harmonization seems to be a good idea on the surface, the bill could lead to the downfall of strong patent protection in the U.S.

Though many independent inventors are opposed to the bill, Congress has largely ignored their views. At Congressional Hearings for Patent Harmonization that Sen. DeConcini and Rep. Hughes have held in the past, prominent independent inventors were not even asked to participate. In order to determine what other inventors feel about the proposal and to bring this to the attention of the U.S. Congress, a class at the Massachusetts Institute of Technology led by Dr. Robert Rines, who is also a leading patent attorney who represents many independent inventors, is conducting a survey. Your participation in this survey would be greatly appreciated and would be a gesture of your concern for the protection of your patent rights. Prof. Rines and his class would like to bring the views of independent inventors, like yourself, up to Congress so no bills that would directly affect inventors will be passed without a fair hearing of the views of independent inventors.

If you have filed patents in the past, would consider doing so in the future, or would like to express your view on patent protection, please fill out this survey and return it to:

Inventors Surveys, c/o L. Lim
305 Memorial Dr., #108A
Cambridge, MA 02139
(617) 225-9668
e-mail: llim@athena.mit.edu

GENERAL DEMOGRAPHICS

1. Name and Address (optional): _____
2. Organization or company (your) inventions are associated with? _____
3. What position do you hold with your organization? _____
4. Are you involved in making decisions concerning for which inventions the organization will seek patent protection? Yes or No
5. How many people does your organization employ? _____
6. To what field(s) of technology do your products or inventions pertain?
 BIOLOGY CHEMISTRY COMPUTERS ELECTRONICS PHYSICS
 MECHANICAL OTHER, please specify: _____
7. Approximately how many patent applications do you or your organization file each year? _____
8. Approximately how many U.S. patents do you or your organization currently hold? _____
 How many foreign? _____
9. Approximately how many patent applications have you or your organization filed in the last ten years? _____
10. Have the patents in your answer to question 9. been intended for start up a company? Yes or No
 If yes, was the start up successful? Yes or No
11. What percentage of the patents in your answer to question 9. have been:
 _____ commercialized by you or your organization,
 _____ involved in a joint venture
 _____ assigned to a company other than your employer,
 _____ licensed,
 _____ not used

FIRST-TO-FILE

Under the current system if a patent is to issue, the first and true inventor is the one entitled to be awarded the patent, not the first person who files for the invention. Under the proposed bill, the first person to file a patent application on an invention will be the one entitled to receive any patent that issues, regardless of who invented first (i.e. first-to-file receives the patent).

12. Are you familiar with the current patent laws? Yes or No
 Are you familiar with the proposal to change the patent laws? Yes or No
13. Which system do you prefer? Current or Proposed Harmonization Bill
14. Would you or your organization change patenting practices and policies if the U.S. were to adopt a first-to-file patent system? Yes or No How? _____

INTERFERENCE

Under the current patent law, when more than one person claims to be the first-to-invent, the Patent Office procedure known as an interference is invoked. This process determines which inventor conceived the invention first and awards that inventor the patent so long as that inventor did not abandon the invention.

15. Have you ever been involved in an interference? Yes or No
16. Do you fear being involved in an interference? Yes or No
17. How serious of a problem do you consider the current interference practice to be?
 1 2 3 4 5
 not serious very serious

18. What are your concerns about interference proceedings?

_____ expense, _____ time, _____ complexity of proceeding, other, please specify: _____

19. Do you believe interference proceedings enhance the protection available to you or your organization's inventions? Yes or No

20. Would you or your organization change patenting practices and policies if interference proceedings were not available? Yes or No If yes, how? _____

PRIOR USER RIGHTS

Under the proposed system, any party who can demonstrate "significant" work, amounting to "substantial preparation", prior to the patent application date will be entitled to a royalty-free, non-exclusive license covering the scope of that "significant" work, or the scope contemplated as evidenced by the "substantial preparation". Proceedings for determining such rights are presently undefined, but are likely to resemble interference proceedings.

21. How serious of an effect and why would prior user rights affect your actions in:

Willingness to apply for patent protection _____

1 2 3 4 5

not affect seriously affect

Willingness to maintain trade secrets _____

1 2 3 4 5

not affect seriously affect

Ability to raise capital for R&D or business start up _____

1 2 3 4 5

not affect seriously affect

22. How important is the exclusivity of a patent to your operation? Why? _____

1 2 3 4 5

not important very important

23. Would you or your organization change patenting practices and policies if prior user rights were available under the proposed law? Yes or No How? _____

PROVISIONAL PATENT APPLICATIONS

Under the proposed system, there will be a procedure for filing a brief disclosure of an invention, known as a provisional application. The disclosure need only contain a description of the invention and need not contain claims to identify the scope of protection the inventor expects to seek when filing the actual application. The idea behind the provisional patent application is to preserve a date for the inventor's rights under the first-to-file system. The provisional patent application is a disclosure that acts as a "place holder" for the inventor. In order to obtain patent protection, a standard patent application will have to be filed within one year of the filing of the provisional patent application.

24. Do you/does your organization use an attorney to prepare your patent applications? Yes or No

25. Do you believe you could write an adequate description of your invention for obtaining patent protection, without the aid of an attorney? Yes or No

26. Do you believe that the provisional patent application would be useful to you or your business? Yes or No

27. How do you believe you would use the provisional patent system for your best protection?

28. Would you or your organization change patenting practices and policies if provisional patent applications were available? Yes or No

CONTINUATION AND CONTINUATION-IN-PART PATENT APPLICATIONS

A common practice in the U.S. Patent and Trademark Office is to issue a final rejection of an application as the Office's second Action. This means that any amendments or arguments that an applicant wishes to make after the final rejection are not entered as a matter of right, but rather at the

discretion of the Office. An applicant may, under the current law, appeal the decision to the Board of Patent Appeals and Interferences. Alternatively, an applicant may re-file the application as a continuation application, effectively recycling the application for the cost of filing a new application. This continuation application maintains the original, or parent, application's filing date, and allows entry of an amendment or argument as a matter of right. A continuation-in-part application is filed when additional, related information is desired to be added to a previously-filed application on the same invention. This tool is used, amongst other reasons, to direct a patent application to a currently marketed product not adequately anticipated during the patent application drafting, or where new information is available. Although the added information receives only the benefit of the date of filing of the continuation-in-part application, the portion of the application corresponding to the parent application does receive the benefit of the original, parent application filing date.

29. Have you/has your organization used continuation or continuation-in-part patent applications?

Yes or No

30. If you answered yes to question 29, have you found the practice valuable?

Why? _____

31. How serious an impact would it be to your business if continuation and continuation-in-part applications were not available?

1 2 3 4 5

least serious

most serious

Why?

32. Would you/your organization change patenting practices and policies if continuations and continuations-in-part were not available? Yes or No. If yes, how? _____

PUBLICATION

The proposed changes include publication of the pending patent application 18 months after the patent application is filed. Before the publication date, the inventor will need to decide whether to continue the application, allowing the application to be published, or to abandon the application, in order to maintain secrecy. Under the current system, publication occurs only upon issuance of a patent.

33. Do you believe publication of pending patent applications after 18 months would jeopardize you/your organizations operations or plans? Yes or No

34. How serious an impact would publication of pending applications 18 months from their filing dates have on your business?

1 2 3 4 5

not serious very serious

Why? _____

35. Would you/your organization change your patenting practices and policies based on the knowledge that your application, if still pending, would be published 18 months after it is filed in the U.S.? Yes or No How? _____

GRACE PERIOD

Under the current system, an inventor may file a patent application within one year of disclosure of his invention, whether the disclosure is made by himself or a third party. Under the proposed changes, only a disclosure by the inventor will not interfere with his right to obtain patent protection. If there is any disclosure by an innocent third party prior to filing the application, the inventor is barred from receiving a patent.

36. Do you/your organization tend to file patent applications before ANY disclosure (publication, marketing, testing)? Yes or No

37. Have you/has your organization taken advantage of the current one-year grace period? Yes or No

How often? _____

38. How serious an impact would your business experience if the proposed grace period were adopted in place of the current law? _____

39. Would you/your organization change patenting practices and policies if the proposed change to the grace period were enacted? Yes or No If yes, how? _____

APPENDIX B: Survey Form Used in 1994

Because of the developments in the Patent Office that prompted the U.S. to abstain from pursuing harmonization of U.S. patent laws for the time being, the survey used by the 6.931 class in the spring of 1994 was slightly modified from the version used during the previous semester. Again, the surveys were sent out to inventors in three groups: independent inventors, inventors in small businesses (under 51 employees), and large businesses (over 50 employees). In addition, the questionnaire form was published in the newsletter of the United Inventors Association of the United States of America. The inventors and businesses surveyed were not aimed toward any specific field. No attempt was made to attain a survey response from representatives of all technological fields either. Due to limitations of structuring the project for a class assignment and also due to limited resources, the sample field obtained is primarily from the New England area, though a few responses were from inventors in various states such as Ohio, Texas, and California.

Survey of Independent Inventors Views of the Patent System Harmonization Act and Suggested Changes to the Current Patent System

GENERAL DEMOGRAPHICS

1. Name and Address: _____
2. Organization or company (your) inventions are associated with? _____
3. What position do you hold with your organization? _____
4. Are you involved in making decisions concerning for which inventions the organization will seek patent protection? YES or NO
5. How many people does your organization employ? _____
6. To what field(s) of technology do your products or inventions pertain?
BIOLOGY CHEMISTRY COMPUTERS ELECTRONICS PHYSICS
MECHANICAL OTHER, please specify: _____
7. How many patent applications do you or your organization file each year? _____
8. How many U.S. patents do you or your organization currently hold? _____

How many foreign? _____

9. How many patent applications have you or your organization filed in the last 10 years? _____

10. Have the patents in your answer to question 9. been intended for start up a company?

YES or NO

If YES, was the start up successful? YES or NO

11. What percentage of the patents in your answer to question 9. have been:

_____ % commercialized by you or your organization,

_____ % involved in a joint venture

_____ % licensed,

_____ % not used

FIRST-TO-INVENT changed to FIRST-TO-FILE:

Under the current system (first-to-invent) if a patent is to issue, the first person to conceive the invention and reduce the invention to practice is the one entitled to the patent. Under the proposed bill (first-to-file), the first person to file a patent application on an invention will be the one entitled to receive any patent that issues, regardless of who invented first.

12. Are you familiar with the current patent laws? YES or NO

Are you familiar with the proposal to change the patent laws? YES or NO

13. Which system do you prefer? CURRENT or PROPOSED HARMONIZATION BILL

14. Would you or your organization change patenting practices and policies if the U.S. were to adopt a first-to-file patent system? YES or NO How? _____

INTERFERENCE to be eliminated:

Under the current patent law, when more than one person claims to be the first to invent, the Patent Office procedure known as an interference is invoked. This process determines which inventor conceived the invention first and awards that inventor the patent so long as that inventor did not abandon the invention. If the proposed system is adopted, interference proceedings will be abolished, since they would no longer be needed because the priority will simply be given to the person who was first-to-file.

15. Have you ever been involved in an interference? YES or NO

16. How serious of a problem do you consider the current interference practice to be?

1 2 3 4 5

(no problem) (very serious problem)

17. What are your concerns about interference proceedings?

_____ expense, _____ time, _____ complexity of proceeding, other, please specify: _____

18. Do you believe interference proceedings enhance the protection available to you or your organization's inventions? YES or NO

19. Would you or your organization change patenting practices and policies if first-to-file were adopted and interference proceedings were not available? YES or NO

If YES, how? _____

PRIOR USER RIGHTS will be introduced:

Under the proposed first-to-file system, in order to compensate those who invented first but were not able to be the first-to-file for the patent, something called prior user rights is offered for compensation. However, prior user rights do not just allow the inventor who was too slow to the patent office to obtain some rights. Instead, it is very broad and would allow many more parties to obtain prior user rights. Any party who can demonstrate "significant" work, amounting to "substantial preparation" prior to the patent application date will be entitled to a royalty-free, non-exclusive license covering the scope of that "significant" work or the scope contemplated as

evidenced by the "substantial preparation". Proceedings for determining such rights are presently undefined, but are likely to resemble interference proceedings

NOTE: Prior user Rights do NOT exist under the current system.

20. How serious of an effect and why would prior user rights affect your actions in:

- | | | | | | |
|--|--------------|---|---|--------------------|---|
| -Willingness to apply for patent protection | 1 | 2 | 3 | 4 | 5 |
| | (not affect) | | | (seriously affect) | |
| -Willingness to maintain trade secrets | 1 | 2 | 3 | 4 | 5 |
| | (not affect) | | | (seriously affect) | |
| -Ability to raise capital for R&D or business start up | 1 | 2 | 3 | 4 | 5 |
| | (not affect) | | | (seriously affect) | |

21. How important is the exclusivity of a patent to your operation?

- | | | | | |
|-----------------|---|---|------------------|---|
| 1 | 2 | 3 | 4 | 5 |
| (not important) | | | (very important) | |

Why? _____

22. Would you or your organization change patenting practices and policies if prior user rights were available under the proposed law? YES or NO How? _____

PROVISIONAL PATENT APPLICATIONS will be introduced:

Under the proposed system, there will be a procedure for filing a brief disclosure of an invention, known as a provisional application. The disclosure need only contain a description of the invention, and no claims to identify the scope of protection the inventor expects to see when filing the actual application. The idea behind the provisional patent application is to preserve a date for the inventor's rights under the first to file system. The provisional patent application is a disclosure that acts as a "place holder" for the inventor. In order to obtain patent protection, a standard patent application will have to be filed within one year of the filing of the provisional patent application.

NOTE: Provisional Patent Applications do NOT exist under the current system.

23. Do you or your organization use an attorney to prepare your patent applications? YES or NO

24. Could you write an adequate description of your invention for obtaining patent protection, without the aid of an attorney? YES or NO

25. Would the provisional patent application be useful to you or your business? YES or NO

26. Would you or your organization change patenting practices and policies if provisional patent applications were available? YES or NO

How? _____

PUBLICATION time will be altered:

Under the current patent system, the patent application is not published until the patent is issued. Thus, secrecy of the patent application is insured until the issuance of the patent. In the proposed changes, pending patent applications will be published 18 months after the patent application is filed, regardless of whether the patent has yet issued. In the proposed system, within 18 months of filing the application, the inventor will need to decide whether to continue the application, allowing the application to be published, or to abandon the application, in order to maintain secrecy.

NOTE: In the current system, the average time for processing a patent application is around 19 months.

27. Would publication of pending applications 18 months from their filing dates seriously affect your business? 1 2 3 4 5
(not affect) (seriously affect)

28. Would you/your organization change patenting practices and policies based on the knowledge that your application, if still pending, would be published 18 months after it is filed in the U.S.? YES or NO
 How? _____

GRACE PERIOD will be changed:

Under the current system, an inventor may file a patent application within one year of disclosure of his invention, whether the disclosure is made by himself or a third party. Under the proposed changes, only a disclosure by the inventor will not interfere with his right to obtain patent protection. If there is any disclosure by any third party prior to filing the application, the inventor is barred from receiving a patent.

29. Do you/your organization tend to file patent applications before ANY disclosure (publication, marketing, testing)? YES or NO

30. Have you/has your organization taken advantage of the current one-year grace period? YES or NO
 How often? _____

31. If the proposed grace period were adopted in place of the current law, what kind of impact would that have on you or your business? 1 2 3 4 5
(not affect) (seriously affect)

32. Would you/your organization change patenting practices and policies if the proposed change to the grace period were enacted? YES or NO
 If YES, how? _____

The above changes concerned the Patent Harmonization Act.
The following questions address issues of what changes you would like to see in the U.S. Patent Office.

Interference Proceedings

1. Do interference proceedings need to be improved? YES or NO
2. Would filing affidavits instead of following full legal disclosure procedures help the interference proceedings? YES or NO How? _____
3. Would elimination of interference proceedings be a good reason to change over to the First-to-File system? YES or NO

Patent Application Processing Time

4. Does the application processing time for patents need to be improved? YES or NO
5. What would you consider a good processing time for patent applications?
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
 (months)
6. Is the development of an electronic patent search database a worthy expenditure of the Patent Office? YES or NO

U.S. Filing Fees and Maintenance Fees

7. Are the costs of filing and maintaining patents in need of improvement? YES or NO
8. Are U.S. filing fees too high now? YES or NO
9. How much do you pay now to file a patent application? \$ _____

10. What is the upper limit on what you would pay to file a patent? \$ _____
11. How does the cost of filing patents in the U.S. compare to the cost of filing patents in:
Europe? 1 2 3 4 5 Japan? 1 2 3 4 5
(less fair) (more fair) (less fair) (more fair)

Quality of Patent Examiners

12. Is the quality of U.S. patent examiners in need of improvement? YES or NO

Access to Patent Information

13. Is access to patent information in need of improvement? YES or NO
14. Would having public free or low cost access to all of the U.S. Patent Office text information improve the system? YES or NO

Continuation and Continuation-in-Part Applications

15. Are continuation and continuation-in-part applications useful? YES or NO
16. Have you used continuation or continuation-in-part applications? YES or NO

Thank you for completing this survey.

Please return the survey to:

Inventors Surveys, c/o L. Lim
305 Memorial Dr., #108A
Cambridge, MA 02139
(617) 225-9668
e-mail: llim@athena.mit.edu

APPENDIX C: Comments of Respondents on Issues Covered in the Survey

The questionnaire form used gave respondents the opportunity to comment on the topics covered by the survey. A sample of the comments from the inventors and businesses surveyed is listed below.

First-to-File

Responses to the question: "How would you or your organization change patenting practices and policies if the U.S. were to adopt a first-to-file system?"

"would not be encouraged to invent anymore"

"loss of protection would inhibit innovation"

"May not patent"

"Would be significantly less willing to present concepts at technical conferences. MORE SECRETIVE."

"We'd be quick to scam ideas off of competitors & patent first"

"We'd be a lot more secretive"

"Maintain secrets better"

"stifle interchange with colleagues"

"steal ideas!"

"would be a little bit crisper in filing"

"perhaps file faster"

"quicker/earlier filing"

"file sooner"

"file sooner on selected items"

"file more ideas. This would create more paper work."

"try to file as fast as possible. Even file extraneous ideas....just load up."

"would adapt as necessary"

"everything would be hurried"

"We'd file more patents and spend more money on filing"

"hire more lawyers"

"[first-to-file] would make the engineering difficult, negative impact on extended development"

Interference

Responses to the question: "How would you or your organization change patenting practices and policies if interference proceedings were not available?"

"not much change, we try to avoid them [interference proceedings] as much as possible anyway"

"no change"

"Again, we'd have to spend more money and be more diligent regarding patent filing."

"It would simplify the process but compromise the principle."

"file first for everything"

"more secretive"

"resort to trade secrets"

"file more, file faster"

"file right away, keep secrets"

"would keep mouth shut, tighten up internally"

"removes room for negotiation of licensing"

"Very opposed to switchover because patents are so expensive. Big companies can get them quickly. First-to-file would favor whoever could throw money at it all first. In Europe, less small businesses, more big corporations. U.S. Economy depends on small businesses. These changes would hurt them."

Prior User Rights

Responses to the question, "Why is exclusivity of a patent important to your operation?"

"small start-ups can't afford the competition"

"small corp. cannot survive if there are many competitors with a similar product"

"Without exclusivity, as a small company, we have very poor chances."

"If any one had prior user rights, it would preclude the starting of a small business."

"gives us a product edge"

"small niche"

"patents maintain our leading edge"

"need exclusivity for patent to be valuable"

"can capture market"

"Allows me to recoup money invested in R&D"

"It is necessary to obtain return on research and development costs."

"feel hard work is rewarded"

"We have a large R&D budget which is somewhat subsidized by royalties."

"protects our products"

"Designs are easy to reproduce."

"Value of patent depends on exclusivity."

"That's the whole idea of a patent."

"In order to maintain a competitive edge in a close market dominated by a number of large companies the patent must be exclusive. One company with prior user rights could ruin that edge."

"Patent is a trade: monopoly for disclosure"

Responses to the question: "How would you or your organization change patenting practices and policies if prior user rights were available under the proposed law?"

"more careful, inhibit exchange of ideas and investment"

"we'd be wary of spending money on innovation..."

"use trade secrets"

"maintain secrets"

"secretive!!!"

"we would seriously consider not patenting"

"doesn't solve the mess"

"apply for prior user rights rather than licensing agreements"

"keep more detailed, witnessed records"

Provisional Patent Applications

Responses to the question: "How would you or your organization change patenting practices and policies if provisional patent applications were available?"

"we would have to generate more paperwork"

"file a lot of place holders now"

"file in early development stages"

"quality of patentable ideas would go down"

"each significant invention will be filed"

"Any idea deemed to be patentable would be 'provisionally patented,' unless the cost was too high, in which case more secrecy would be maintained."

"A provisional patent application would be filed, probably without the aid of an attorney."

"If this 'placeholder' were available, we would identify all research projects we do involving patentable technology, file a vague 'placeholder' application while continuing development efforts just to 'block out' others doing research in the same field."

"More people would be involved in submitting the patent forms."

"Every idea would get a provisional patent. Any concept would be sent in. Absurd"

"use lawyers less"

18 Month Publication

Responses to the question: "How would you or your organization change patenting practices and policies based on the knowledge that your application, if still pending, would be published 18 months after it is filed in the U.S.?"

"stop doing patents"

"It would cause us to favor the development of process-based 'trade secrets' as opposed to technology that could readily be monitored or reverse engineered by competitors"

"This would be very bad...not assured protection."

"Under pressure to disclose, I'll abandon the application."

"stifle or delay inventions"

"application process delayed"
"not use U.S. patent system"
"early decision making is crucial"
"need to patent eventually, so it doesn't matter"

Grace Period

Responses to the question: "How often have you taken advantage of the current one-year grace period?"

"all the time"
"every time"
"always used"
"frequently"
"nearly every time"
"1/3 of the time"

Responses to the question: "How would you or your organization change patenting practices and policies if the proposed change to the grace period were enacted?"

"be much more secretive - it could slow down the rate at which our innovations enter our products"
"slower disclosure"
"Disclosure would be delayed until after substantial development . Secrecy would have to be increased once again."
"would file patent before disclosure"
"file before disclosure"
"secrecy"
"we wouldn't get any idea of the marketability of the item, nor get an indication if the item is worth patent costs"
"When doing consulting for a 3rd party, it would not be possible to retain rights to ideas that this 3rd party would disclose to the public."
"would not publish"

