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The Future of the Global Patent System

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Prior to preparing my remarks I examined the subjects to be addressed by other speakers. My impression was that the focus of this conference would be the relationship of intellectual property – in particular patents – to wealth creation and economic growth. Other speakers were asked to address issues such as the valuation of intellectual property, intellectual property rights as a strategic weapon, and the maximization of the economic benefits of intellectual property.

The underlying presumption of this conference, therefore, seems to be that a better understanding of intellectual property – how to capture legal rights in it, how to manage it and how to market it – is essential to the economic well-being of a modern country like Denmark. I found the Ernst & Young and Ementor report entitled “Management and evaluation of patents of trademarks” to be of particular interest. Certainly, it is difficult to develop a national, much less a company policy on intellectual property, unless you can quantify these intangibles and understand how they can be exploited.

My talk this afternoon will focus on patents and on the increasing difficulties facing inventors and multinational companies in securing on a multinational basis the exclusive property rights represented by patents. I think that this is particularly important for creators in a small country like Denmark. Denmark’s future prosperity will be determined by its ability to create and market intangibles in large foreign markets, such as the United States and the other member countries of the European Union. And, the emerging economies of Eastern Europe, Asia and Latin America provide a growing number of consumers for Danish products.

As an American it is easy to be ignorant of the issues facing an advanced economy in a small country. Whenever we think of starting a business, whenever we invent something, we can start with the assumption that we will have an immediately available market of 275 million consumers, and a single national legal system to recognize and enforce our rights. That is not true in a country like Denmark. My own perspective on policy for countries with small domestic

markets came into focus during a visit to Australia about five years ago. During that visit I was exposed to that country's national industrial policy called "Innovate Australia."

That policy recognized that a country of 18 million people could not hope to be home to a wide variety of companies which would dominate global markets. Therefore, the government's policy was to provide a climate in which Australians could find and exploit global "niche markets" for the innovations of Australians. As an example, it is unlikely that an Australian company will soon displace Microsoft as the dominant supplier of PC operating systems. However, it is entirely possible that Australians can develop specific applications software, which can quickly find a global market in consumers whose personal computers run on Microsoft's Windows.

Therefore, countries like Australia – or Denmark – which want to exploit niches in big markets like the United States should have a very strong interest in assuring that the intellectual property rights in their niche products can be protected from copying in those large markets. I hope what I am about to say will be food for thought about the problems Denmark will face in securing the rights of its innovators in the changing global environment.

What we call "intellectual property" is generally considered to fall into three categories: patents, copyrights, and trademarks. As intellectual property has become much more central to wealth creation, Denmark is not the only country to focus on the role of intellectual property in its economy. Governments around the world find themselves including intellectual property rights issues in the forefront of national and global economic policy-making.

My own career is a testament to this fact. In 1993 I was appointed by President Clinton to be Assistant Secretary of Commerce and Commissioner of Patents and Trademarks. As recently as the early Reagan Administration, this position had consisted solely of running the U.S. Patent & Trademark Office, and very little policy making was involved. The office of Commissioner of Patents and Trademarks did not carry the sub-cabinet "assistant secretary" rank. However, in 1982 the Congress made the Commissioner an assistant secretary reporting directly to the Secretary of Commerce – in other words one level away from reporting directly to the President of the United States. As a result of legislation enacted by the Congress last year, the title has been changed to "Undersecretary of Commerce for Intellectual Property" – an even higher rank – and the job today is mainly an economic policy position dealing with all forms of intellectual property rights – patents, copyrights and trademarks. It involves the formulation of international economic and trade policy in addition to U.S. domestic policy. All of this reflects the importance of property rights in intangible creations of the human mind in a post-industrial society.

While I have a strong interest in all forms of intellectual property, my talk this afternoon will focus on the patent system. Unlike copyrights and trademarks, patents cannot be granted in the United States without a thorough examination. This is because the patent right goes far beyond the right to prevent another from simply copying. A patent conveys the exclusive right to exclude all others from making, selling and using the invention for 20 years from filing, regardless of whether another person conceives of it independently or was unaware of the existence of the patent.

A patent is a very strong right, and owning a patent can have an extremely significant economic impact. In the United States today patents are absolutely essential for many innovative enterprises to obtain the investment capital they need to succeed and grow. This is particularly true of small and medium sized businesses. Without patents there would be no Silicon Valley, there would be no biotechnology industry, there would be no life saving therapy for HIV disease. However, investors who provide much needed capital to innovators on the basis of patents, act under the assumption that patents granted in the United States have been properly examined and can be presumed to be valid in the event of a challenge. The quality and trustworthiness of the examination system is at the core of investor confidence in many high-tech companies.

Therefore, it is most unfortunate that the patent system – both on a national level in the U.S., but also on a global level – is in deep trouble. Let me begin by describing the current state of affairs in the United States, discuss the international implications, and conclude with some ideas as to how we might avoid killing the goose that lays the golden egg.

I do not believe that most patent professionals much less members of the public at large, understand that the patent system is entering into a period of crisis. This crisis in the United States arises from four phenomena: (1) several years of larger than anticipated increases in patent filings at the United States Patent & Trademark Office (USPTO), (2) the inadequacy of the USPTO's capability to search non-patent prior art, (3) the absence of a global structure for search and examination of patent applications, and (3) diversion of USPTO fee revenue by the Congress.

Computer projections by USPTO management show that within five years the pendency of patent applications will rise to the highest levels in history. In the fast moving field of telecommunications, computer and software technology the average patent application will issue 44 months after filing. Given the very short product cycles linked to the rapid pace of innovation in the information technology industry, an average pendency approaching four years could have an extremely negative effect on investment. And, of course, a 44-month *average* pendency means that many of the most complex and, therefore important, inventions will take much longer to examine.

Of even greater consequence is the long-range impact on the USPTO. The PTO's revenue stream is back-ended – meaning that the system is disproportionately financed by issuance and maintenance fees paid *after* the examination process is completed. This increase in pendency can easily become permanent and continually worsen if it is not addressed soon and decisively. This is because as the examination backlog increases, the money needed to hire the examiners and pay for the technology and equipment to process patent applications, will remain constant, leaving the USPTO without the resources necessary to “dig out” of the backlog.

Because issued patents are a major incentive to investors in new technology, the health of the American economy will be affected negatively as the PTO becomes unable to issue patents within the time period required by increasingly shorter cycles of change in innovation.

At the same time that pendency is increasing at a financially squeezed USPTO, the system is being expanded to include previously unpatentable subject matter, such as business methods and

computer software. Even with an adequate number of examiners, the PTO still would be unable to deal effectively with these new kinds of patent applications because it lacks a comprehensive and easily accessible database of non-patent prior art. Historically, patent examiners determine whether inventions claimed in patent applications meet the statutory tests of novelty and non-obviousness by comparing them with those disclosed in *previously issued* patents. However, effective examination today requires comparing claimed inventions with information disclosed in countless journals and other publications to which PTO examiners have limited access and for which they lack effective search tools.

Clearly, Congress will have to increase the funding of the PTO to deal with the coming crisis. But, that will not be enough. The PTO will have to develop new ways of doing business and employ search and examination technology much faster and more effectively than in the past.

The United States Patent & Trademark Office already employs over 6,500 persons, of whom about 3,000 are patent examiners. All of these examiners possess university degrees in one or more areas of technology. Increasingly, they possess advanced degrees such as Ph.D's in biotechnology or – for examiners who deal with business methods – MBAs or advanced finance degrees. In discussions with senior managers at the USPTO, I find a growing awareness that simply adding more patent examiners will not be enough to resolve the crisis. How many more examiners can you hire? Five thousand, ten thousand? How can you train and manage this large number of specialists, and how do you give them access to the data they need to determine whether a claimed invention meets the requirements necessary for issuance of a patent?

In order to obtain a patent in the United States a claimed invention must meet three tests: novelty, non-obviousness and utility. In Denmark and other European countries the non-obvious requirement is characterized as the requirement of “the inventive step” – meaning that one of ordinary skill in the technology involved would not as a matter of course conceive of the invention as the natural next step in his or her field of expertise. In order to determine whether a claimed invention is novel and whether it constitutes an inventive step, a patent examiner must look at existing technology and compare it to the claims in the patent application.

Historically, U.S. patent examiners looked for the most part only at previously issued United States patents to make this determination. Today, U.S. patent examiners have access to the databases of the Japanese Patent Office and the European Patent Office and consult these as well. But the number of large patent offices is growing, with South Korea and China as examples. U.S. examinations do not routinely include prior art from these offices. And, an examination of previously issued patents does not necessarily assure that an examiner will have a complete picture of the state of the art. A plethora of journals and other publications, not to mention Internet web-sites, contain information which may be of relevance.

At the present time when a USPTO examiner needs to examine published prior art other than previously issued patents, he or she must consult the multitude of journals and other publications which may be relevant to the subject matter of the search. In practice, the USPTO purchases access to electronic databases such as Derwent, Nexis and Dialogue. These databases contain many different publications in electronic form. However, none of them are searchable across the entire database, and they may be searched only using the key words developed by a given

examiner. This is in sharp contrast to the electronic search of the patent database. By contrast, previously existing patents may be searched across the entire spectrum of issued patents and word searches may be supplemented with searches according to patent classification or by hyperlinking to references appearing in any patent. There simply is no comparison with the quality of searches of the patent database and those of non-patent literature.

This disparity of the quality between searches of the patent data base and searches of non patent literature, has especially negative consequences for business methods and computer software, because most of the prior art in these areas is to be found in non patent literature. Clearly what is needed is a single data base of all the relevant existing publications, and an engine to search this data base superior to anything now in use. The new search engine must be able to narrow the choices for examiners so that the amount of time necessary to humanly compare prior art with claims in a patent application can be reduced to the minimum. This kind of search engine must employ artificial intelligence attributes not currently available in the search technologies employed by the USPTO, the EPO or the JPO. Indeed, as far as I know, the EPO is not even able to conduct a real time search of a good share of its own database. While the EPO now stores some of its digital library on easily searchable magnetic tape, some of its pre-existing patents are stored electronically on CD ROMS which must be retrieved mechanically for use by an examiner.

Closely related to the issue of superior electronic search tools is the issue of electronic management of patent case files. At the present time almost all patent applications in the USPTO are filed in paper form and continue to be processed in that form as they move through the system. While applications are now routinely scanned for computer storage, the use of paper has not been eliminated. In an office which receives nearly 300,000 patent applications annually – often hundreds of pages in length – this leads to enormous opportunities for errors. In addition, each application is different as no standard format is required. If required documentation or information is missing, months may be lost in notifying the applicant and receiving the corrective material.

All of this would be changed if patent applications were filed – and then processed – electronically. However, for that to happen, not only does the USPTO have to set up a mechanism for Internet filing, but applicants must actually use it. And that is a serious problem. The USPTO has been accepting trademark applications through the Internet since 1998. However, as of today only 12% of total trademark applications are made electronically. Since October of last year the USPTO has begun to accept patent applications electronically and a total of 88 have been submitted. In order to have a meaningful impact on office efficiency, the number of electronic filings must be more than 50%, and for the full effect to be realized 100 percent of patent filings must eventually be electronic.

There are two impediments to electronic filing which, at the moment, are beyond the control of the USPTO. The first is that the new Patent Law Treaty, promulgated in May, 2000, forbids a member state from *requiring* automated filing for five years. However, under the treaty, the USPTO could require U.S. nationals to file electronically. And, this would cover more than 50% of current filings. The second impediment, however, is more difficult to overcome. That is the fact that many corporate patent offices and law firms in the United States lack the technological

capability to interface electronically with the patent office. A remarkable number of corporate patent offices and law firms still manage their own dockets and case files using paper filing and information retrieval systems. Further, many of these offices lack Internet access and do not use information management technologies which can interact with the Windows NT operating system in use by the USPTO. Clearly, this must change if the USPTO is to convert to paperless operation.

Finally, the problems of the PTO are compounded on an international level. Everything I have said about the USPTO could be said about the patent systems of other OECD Member countries. The European Patent Office and the Japanese Patent Office have similar problems and then some. As an example, the EPO has similar automation issues while, its cost structure is much higher – with attendant high fees – and it faces governance problems not encountered by its American counterpart. While the Japanese Office already has electronic filing, it has Parliament-mandated limitations on the number of examiners, it does not look at non-patent data in its examination process, and it is hobbled by the difficulties of searching in the Japanese language.

However, the problems of the USPTO, EPO and the JPO will be greatly compounded as more countries begin to take patents seriously. With the coming into force of the TRIPS Agreement (the intellectual property provisions of the WTO treaty) all countries in the world must have the capacity to accept and process patent applications and to grant effective patent protection. While the extension of effective patent laws to the developing world will make patent rights even more valuable, infrastructure capable of complying with TRIPS obligations exists today only in a handful of developed countries – and even the patent bureaucracies of those countries face problems similar to those of the USPTO.

A vivid illustration of the even greater problem in countries new to the patent system was a devastatingly critical front-page article which appeared in the July 30 edition of The Washington Post. The article, entitled “Patent Claim Ferments Russian Controversy”, described the Russian patent office’s issuance of a patent covering a design for glass bottles which has been in use for millennia.¹ The problems of Russia mirror similar problems in other large countries representing important markets for technology like India, Brazil, Indonesia, and Argentina.

The problems facing all countries are similar to that of the USPTO: how to acquire the technology and resources to deal with an ever increasing volume of complex patent applications and examine them in the light of an exploding volume of global patent and non-patent prior art. In my view the solution to everybody’s problem lies in technology. And it is very fortunate that the fee-based financing system of the world’s patent offices provides the economic foundation for acquiring and implementing high tech solutions.

As an illustration of the technology purchasing power inherent in the patent system, the global business of search and examining patent applications for governmental authorities is today at least a \$5 billion market and is growing at the rate of about 15 percent per year. This growth rate will accelerate as more countries struggle with TRIPS compliance. The USPTO alone will collect over \$1.2 billion in fees in the coming fiscal year and spend approximately \$1 billion, depending on the amount of congressional diversion of fee revenue. USPTO’s Information

¹ Daniel Williams, The Washington Post, July 30, 2000 at page 1.

technology budget will exceed \$180 million, of which nearly \$60 million will take the form of contracts to outside vendors of services.

Patent Offices around the world need to use their revenue generating ability to provide solutions to the customers who pay those fees. They need to shop the global information technology market to purchase – rather than build themselves – state-of-the-art systems for electronic filing, case management, and automated search and examination. This may even include the high-tech human component which must in the end make technical judgments that only trained technologists can make in the examination process.

Just as governments would not think of trying to build complex weapons systems “in-house”, so must they come to realize that much of what was traditionally done internally by patent offices will have to be out-sourced in order to take advantage of the greater ability of the private sector to utilize the latest technology and to recruit the most effective work-force.

This was recognized by the United States Congress in legislation passed last year which gave the USPTO for the first time authority to contract out aspects of patent search and examination which previously had been done only in-house. I hope that the USPTO will quickly take advantage of this new Congressional authority. Only timely exercise of this authority will provide solutions to the domestic U.S. problems I outlined earlier. And, if private sector entities were to obtain contracts with the PTO to provide a new generation of filing, search and examination services, they would be in a position to serve the needs of other patent offices throughout the world. This would avoid the need to re-invent the wheel in every patent office, provide a solution in countries too small or underdeveloped to have an adequate pool of trained examiners, and lead to technical harmonization of the world’s patent system.

In focusing on the administration of patent systems, I do not want to suggest that I am not sensitive to the fact that there remain serious differences among countries in the world on issues of substantive patent law. If we are to have an efficient system of obtaining and enforcing patent rights these differences must be addressed by a process of substantive patent law harmonization. This fact was impressed on me last year at a meeting in Washington where Ingo Kober, President of the European Patent Office, spoke. He made the point that simple simplification of patent filing, administration and examination would be of little value if countries maintained differences such as that which separates the U.S. from the rest of the world on matters such as “first to file.”

Obviously, if the first to invent is not the same as the first to file, you have the likelihood of patents on the same thing being granted to two different applicants in the United States and other countries.

Similarly, differences between the United States and other countries over patent subject matter will increasingly create a balkanized world intellectual property system. The United States, for example, recognizes the patentability of pure “business methods.” Since many – if not most – of the current applications for business method patents in the U.S. involve the Internet, which is a borderless environment, you can easily see the opportunities for legal chaos.

From a European – and particularly a Danish perspective – lack of harmonization regarding design protection is particularly harmful. The United States may be ahead of Europe in protecting its biotechnology and its business methods, but it is way behind in protecting industrial designs. The United States today operates under a design law which was supposed to have been modernized more than 50 years ago, but never was. Repeated efforts in Congress to modernize that law to provide protection against “knock-offs” of the type found in all European countries have been unsuccessful because of the opposition of automobile insurance companies who want to be able for force consumers to use repair parts not made by the original equipment manufacturer. Also, large discount retail chains want to be able to continue to sell cheap knock-offs of items such as furniture and home appliances.

The problems I have describe harm innovators in countries like Denmark who want to obtain strong protection for their products in large markets like the United States where they can maximize the return on investment through volume sales. Therefore, I believe that these problems rise to the level that they must be addressed by politicians and policy-makers, not just technicians.

For many years, international action in the field of patents has been slow. While well-intentioned specialists have dominated the field, the subject of patents is now something that also must be addressed by business and political leaders. It is virtually a cliché that the future of the world economy lies in technology. Hardly a meeting of world leaders takes place without some acknowledgment of this fact. And yet, the patent system often is considered too complex and technical to demand the attention of these leaders. I believe that must change. Patent law *is* the law of technology, and without constant attention given to its administration, without constant, cooperative efforts at global modernization, the promise of a more prosperous world, fueled by an environment friendly, high tech industrial infrastructure will not be realized.