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# Quo Vadis?

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*United States Court of Appeals for the Federal Circuit*

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THE FIFTH ANNUAL  
HONORABLE HELEN WILSON NIES  
MEMORIAL LECTURE  
IN INTELLECTUAL PROPERTY LAW\*

QUO VADIS?

THE HONORABLE ARTHUR J. GAJARSA\*\*

INTRODUCTION<sup>1</sup>

Thank you for coming to the Fifth Annual Helen Wilson Nies Memorial Lecture in Intellectual Property Law. We are very happy and honored to have as our distinguished lecturer Judge Arthur J. Gajarsa of the Federal Circuit. Prior to being nominated by President Clinton to sit on the Federal Circuit, Judge Gajarsa had a distinguished career both in private practice with several prestigious firms and in government. He worked at the United States Patent and Trademark Office and also served as Special Counsel and Assistant to the Commissioner of Indian Affairs in the Department of Interior. We are very pleased to have him, and to have him shed some light perhaps on what goes on at the Federal Circuit. So please help me welcome Judge Gajarsa.

JUDGE GAJARSA'S REMARKS

Thank you, Professor Nard. It is my privilege and honor to be here. I was appointed to replace Chief Judge Nies on the Federal Circuit. She

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\* Audiotape of The Fifth Annual Honorable Helen Wilson Nies Memorial Lecture in Intellectual Property Law, held by Marquette University Law School (April 22, 2002) (on file with the Marquette Intellectual Property Law Review). The lecture is delivered each spring semester by a nationally recognized scholar in the field of intellectual property law.

\*\* Judge Arthur J. Gajarsa was nominated to serve on the United States Court of Appeals for the Federal Circuit by President Clinton in 1997. Judge Gajarsa was nominated to fill the seat on the court vacated by the late Honorable Helen Wilson Nies. In the early part of his career, Judge Gajarsa worked in the United States Patent and Trademark Office. He later clerked for Judge Joseph McGarraghy, United States District Court, and then served as Special Counsel and Assistant to the Commissioner of Indian Affairs at the United States Department of the Interior. Eventually, Judge Gajarsa moved on to private practice and became partner at several prestigious law firms.

1. Professor Craig Allen Nard provided introductory remarks.

was a person who was on the original CCPA,<sup>2</sup> a very active participant. For four years she was also the Chief Judge of the Federal Circuit. I was very honored to replace her. She had big shoes to fill and I am hoping that I will be at least able to perform some of the work that she started.

The title of this speech, *Quo Vadis?*, gives us an opportunity to ask, "Where goest thou?" But in order to know where we are going, we should also know where we have been. It is abundantly clear to most people that over the past twenty years we have made giant strides in some of our basic technologies. If we look around, we have gone from mainframe computers to laptops, which are now more powerful than some of the mainframes of the nineteen seventies. I cut my teeth trying to design, for IBM, the old 7040 drum memory circuits, and it took at that time, ninety-six steps to do a square root program. Just think about that. That was not too many years ago. I went to engineering school in 1958. We have come a long way in our technology since then.

We have transitioned from microelectronics to nanoelectronics. We have made leaps in the biotechnology area. We have deciphered and mapped the human genome. New vocabulary words have entered the lexicon: e-commerce, Internet, and nanotechnology. All of these strides make us realize that the United States has made a transition in its economic structure. It has moved from a mature industrial manufacturing economy to an emerging, entrepreneurial, knowledge-based economy. We seek broader and broader databases in order to satisfy the voracious appetite for information.

This transition has required us to become more sensitive to the needs of our economy. We in the United States have a firm belief that intellectual property protection has been the primary incentive in continuing the spark of genius required to open new technical frontiers. Our forefathers recognized the need for this protection by including the constitutional linchpin for patent and copyright protection in the United States Constitution. In addition, the law has also created trademarks and trade secrets as additional intellectual property rights to incentivize the process of innovation and commercialization of technology.

But what does the intellectual property right provide to its owner? Some believe that it should be defined as a monopoly. That is too strong of a statement. Intellectual property rights are circumscribed by the law, which provides exact and defined rights of exclusion. In other words, the owner or developer of such property has the right to prevent

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2. United States Court of Customs and Patent Appeals.

others from invading her domain. It is a legal contract, which prevents an invasion of the property but allows the public to view it and to develop improvements over the basic claimed right. Why should the law recognize such an exclusive right? Because it is a social contract which is granted. It is granted to the inventor or the author who contributes or adds her work to the database of knowledge, thereby expanding such knowledge and allowing others to build upon it.

However, there are two dialectic forces at work. One is the incentive to spur creativity, innovation, and development of new ideas and concepts, and the other is the basis for which the new information is distributed. How do we distribute that information? And where does it go? We want that information distributed as widely as possible to add to the sum knowledge available to the general public. We balance these dialectic forces, which provide the incentive by granting the right to the patent owner or to the copyright owner, while we also generate and distribute additional information so that others may use it as the building block to the development of yet more creativity and more innovation. In other words, innovation with broad distribution begets more innovation.

The creation of a strong intellectual property system, many believe, has fueled the technological development that we have today. Some believe that the creation of the Federal Circuit in 1982 gave technological development a boost by providing some normalcy in an area of the law which previously had been splintered and unfriendly to intellectual property owners. The past twenty years have in fact brought a new focus in intellectual property law and its impact on technological development.

I submit to you that the Federal Circuit may not have been the primary cause of this technological revolution during the past twenty years, but it certainly has been a major force in the new economy. It has been a catalyst in formatting the development and the accretion of intellectual property. It has brought stability and uniformity in the interpretation of intellectual property law, and primarily, patent law. It has initiated stability by allowing patent holders to know that their property rights, if valid, would be enforced and protected. It has brought uniformity in the interpretation of the law, thereby allowing attorneys to be better able to advise their clients. If you are out in private practice, you need to issue opinions to your clients, and they are paying you for an opinion. You better be sure that clients can rely on it. That is one of the things, I think, that the Federal Circuit has at least attempted to provide—to give some normalcy to patent law.

Recently at the Federal Circuit we had our twentieth judicial conference. Professor Chisum gave his list of the top ten Federal Circuit decisions over the past twenty years. Although reasonable persons may differ on their impact, I think we should note that twenty years ago, no one would have cared about the top ten intellectual property decisions. Think about that: we have come a long way. Professor Chisum's number one decision was *Cybor*.<sup>3</sup> Others may have selected as their number one case *Markman*,<sup>4</sup> *Alappat*,<sup>5</sup> or even *Festo*.<sup>6</sup> But that's not the issue. I think the important aspect is that intellectual property law is now recognized to be at the cutting edge, very important, and very critical to the development of our economy.

The recognition of its importance has been noted even by the United States Supreme Court. Recently Justice Scalia was asked which cases he considered most important in this term of the court. Without hesitation he responded that in the public law area the school voucher case<sup>7</sup> was the most important, but in the private law area he noted that *Festo*<sup>8</sup> was the most important case of the term. When the Supreme Court recognizes the importance of intellectual property law, you know that we have reached the sunrise of technology.

If in the past twenty years we have been laying the foundation for the future of intellectual property law, where are we headed in the next twenty years? I think we can peer into our crystal ball and make some well-reasoned and thoughtful guesses. But we are not wizards. Merlin is not on the Federal Circuit Court.

I want to speak about those technical areas where our court will probably see most of the action in the future. In my judgement, there are three areas of intellectual property law which in the next twenty years will provide my court with most of its activity. The first is the software and business methods area. The frontiers of the statutory provisions of section 101<sup>9</sup> have been advanced beyond the expectation of even the most optimistic patent practitioner in this field. The second

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3. *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 46 U.S.P.Q.2d (BNA) 1169 (Fed. Cir. 1998) (en banc).

4. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995), *aff'd* 517 U.S. 370, 38 U.S.P.Q.2d (BNA) 1461 (1996).

5. *In re Alappat*, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994).

6. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 56 U.S.P.Q.2d (BNA) 1865 (Fed. Cir. 2000), *cert. granted*, 533 U.S. 915 (2001).

7. *Zelman v. Simmons-Harris*, 122 S. Ct. 916, 2002 U.S. LEXIS 502 (2002).

8. 234 F.3d 558, 56 U.S.P.Q.2d (BNA) 1865.

9. 35 U.S.C. § 101 (2000).

is biotechnology. Gene patents will increase and become more dominant. Development of recombinant drugs, gene therapies, genetic tests, and genetically engineered seeds will continue to be afforded proper protection. Biotechnology patents will also continue to evolve rapidly. The third area is nanotechnology. This is where scientists will be using the atom as their building block for new chip technology and new binary logic processors: a great new area that is just being developed.

Taking first the software and business methods areas, I believe that one of the seminal decisions issued by our court, authored by one of the greats of the patent law, was *State Street*.<sup>10</sup> In *State Street*, the Federal Circuit decided that section 101 allows business methods to be patentable.<sup>11</sup> Basically, this extends patentability protection to business methods and software implementing those methods. The statute, as Judge Rich indicated in *State Street*, does not limit itself to machines, manufacture, or composition of matter.<sup>12</sup> It also allows protection for any new and useful process, provided it is novel and nonobvious. If a practical application of a mathematical algorithm containing invention produces a tangible, useful result, it is a patentable subject matter.

The business method area in our new technology of e-commerce and the Internet will be an expanding area of intellectual property coverage. The United States Patent Office has already geared itself for the increasing number of applications in this field by imposing a new patent office review for such applications. It is launching a business method action plan. This process recognizes the need to issue patents in the discipline, which has generated quantum growth in the number of applications. A former commissioner of patents told me that they had over 40,000 applications in new business methods. During the year they received between 300,000 and 320,000 applications, so the new business methods patent applications represent almost 12% of the total. Just think about that. When you are out in private practice, that is a lot of litigation that is just building up and waiting in the pipeline for you to take over.

The ability of the inventor to obtain patent protection in this area will also allow the continued information flow to be disseminated to others, so that others can build and develop improved methods over

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10. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1998).

11. *Id.*, at 1377, 47 U.S.P.Q.2d (BNA) at 1604; *see also* 35 U.S.C. § 101.

12. *See State Street*, 149 F.3d at 1373, 47 U.S.P.Q.2d (BNA) at 1600.

those disclosed by earlier filings. We have already seen some patents in this area, which impact the Internet. The “one click” patent for instance has already been reviewed by the Federal Circuit Court.<sup>13</sup>

In the biotechnology area we know that gene patents have been issued in the past. This follows the precepts of our court, but more importantly, the precedent that was set by the United States Supreme Court in *Chakrabarty*.<sup>14</sup> That precedent clearly established the legitimacy of gene patents for a new strain of bacteria. Intellectual property covering biotechnology has traveled somewhat over troubled road in the past ten years. The United States Patent Office did not issue patents on biotechnology-based methods of medical treatment because it required greater notion of utility. This happened for about five years. There were a limited number of biotech patents issued by the patent office. This notion of utility was subsequently eliminated by a Federal Circuit decision in *In re Brana*.<sup>15</sup> Moreover, in an earlier decision, *In re Durden*<sup>16</sup> there was a prohibition against allowance of process claims covering production of recombinant prior art protein. The Congress then stepped in and legislatively amended section 103 in 1994, which overruled *Durden* in so far as it was being applied to a biotechnological process.<sup>17</sup> Subsequently, the Federal Circuit also eliminated the existing bias against biotech process claims;<sup>18</sup> however, it was done mostly by legislation.

We have had various opinions in the gene sequencing area, such as *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*<sup>19</sup> and *Regents of the University of California v. Eli Lilly & Co.*<sup>20</sup> All of these cases dealt with the written description requirements of section 112.<sup>21</sup> This area continues to evolve, as noted by our recent decision in *Enzo Biochem* that discussed the issue of deposits and enablement.<sup>22</sup> We also need to determine whether or not we should have a different standard of

13. *Amazon.com, Inc., v. Barnes&Noble.com, Inc.*, 239 F.3d 1343, 57 U.S.P.Q.2d (BNA) 1747 (Fed. Cir. 2001).

14. *Diamond v. Chakrabarty*, 447 U.S. 303, 206 U.S.P.Q. (BNA) 193 (1980).

15. 51 F.3d 1560, 34 U.S.P.Q.2d (BNA) 1436 (Fed. Cir. 1995).

16. 763 F.2d 1406, 226 U.S.P.Q. (BNA) 359 (Fed. Cir. 1985).

17. 35 U.S.C. § 103 (2000) (requirements of nonobviousness); 763 F.2d 1406, 226 U.S.P.Q. (BNA) 359.

18. *See generally* *In re Ochiai*, 71 F.3d 1565, 37 U.S.P.Q.2d (BNA) 1127 (Fed. Cir. 1995); *In re Brouwer*, 77 F.3d 422, 37 U.S.P.Q.2d (BNA) 1663 (Fed. Cir. 1995).

19. 927 F.2d 1200, 18 U.S.P.Q.2d (BNA) 1016 (Fed. Cir. 1991).

20. 119 F.3d 1559, 43 U.S.P.Q.2d (BNA) 1398 (Fed. Cir. 1997).

21. 35 U.S.C. § 112 (2000).

22. *Enzo Biochem Inc. v. Gen-Probe Inc.*, 285 F.3d 1013 (Fed. Cir. 2002).

patentability for biotech cases and also for software. Should there be a different patentability standard that is established by decision of our court or by statute? This is an issue which needs to be considered and thoughtfully analyzed to ascertain the impact, if any, such a differential standard would have.

In the next twenty years, the property rights in biotechnology is one area, I think, that needs to be thoughtfully considered because it also brings in an ethical dimension. The sequencing of the human genome is obviously an enormous benefit to the general public. It will allow doctors to identify genes contributing to a given disease. It will lead to more accurate diagnoses and precise classification of disease severity. Although this science opens new vistas and potential cures to disease, where do we draw the line, if a line is to be drawn? Will we be reviewing patents for gene chips, which provide physicians with a diagnostic tool to determine the present health of the patient? What are the implications for infringement each time that a physician uses her new diagnostic tool? The mapping of the human genome was as much of a triumph of advance computations as of advanced biology. What we have developed may drive astounding quality of life improvements and reduce the cycle-time for development of new drugs. Personalized medications that will specifically interact with an individual's unique genetic makeup will be developed. We will have drugs specifically designed for each individual human being. We will have the potential to defeat cancer, heart disease, or AIDS. Some believe that our life span will also increase by twenty or more years.

Pandora's box has been opened. It leads not only to improved medication in therapeutics at the molecular level but will also allow beneficial lifestyle changes or preventive medications to protect health. But there is also a negative impact for this new advanced technology, which raises a dimensional issue of ethical and social concerns. Do we allow patents to be obtained and enforced for the entire human genome sequence? Or do we allow only the process by which the human genome sequence was developed to be patented? The human genome biotechnology morass raises many issues for intellectual property law, but also raises many more issues of ethical and social implication. This technology will allow us to interpret genetic variations among individuals. There are privacy issues in the use of genetic information. What is a proper balance among all of these issues? Where do we go? If we find that someone does have a particular genetic strain, do we allow that person to know what that strain is? Do we pass that information on to insurance companies? These are ethical issues. They



are not just legal issues. The law does not stand by itself. We need to consider some of the ethical issues that are generated by this new technology.

At the Federal Circuit we shall see but a small slice of this area, namely protection that is offered in and the validity of issued intellectual property. We do not live in a cocoon, even at the Federal Circuit. The court must be sensitive to the entire broad schematic scope of the impact which biotechnology patents will have on the fabric of our society. Ethical concerns must be a factor at the same time that our intellectual property law system balances incentives to creators with the ability to diffuse innovation. This ethical consideration adds another branch to the dialectic tension, which is inherent in the structured patent system.

The third area, which will create additional intellectual property law progress, in my judgment, is the area of nanotechnology. When I studied electrical engineering we studied vacuum tube diodes. And I am not that old. We studied circuit theory courses, which included a new technology at that time known as the solid-state transistor. But the new item was not even in our textbooks; it was given to us in mimeograph lecture notes. After graduation, in the patent office, I reviewed patent applications, which had solid-state transistors and rotary drum magnetic memories. We used slide rules in those days, which are now considered historic tools. The machine that produced the slide rule is now in the Smithsonian Institute. In private practice, I represented several companies which designed solid-state computer chips, the MOS chip, the wafer size of a half-dollar and containing hundreds of transistors. Technology leap, as stated by Dr. Moore, one of the founders of Intel, is exponential. Moore's law stipulates that computer memory will grow by two-fold capacity every eighteen months. The only limit is the size of the molecule of the element being used. However, what if we could make that technology smaller than the molecule and use the atom as the smallest building block? We have now reached a new level of our technological development: nanotechnology.

What does nanotechnology mean for technological development? It will provide us with the ability to develop computers the size of a dime. It will combine biology with electronics. It will give us the means to meet tomorrow's massive computing challenges. We shall see the assembling of cellular architectures of thousands and even millions of simple microprocessors that will work in parallel on discreet chunks of a problem. Scientists today can etch microscopic lines in computing

components, but the processes are intricate, complex, and expensive. But what if we use nano-skilled features? We can form materials by using chemical reaction. That is the beauty of nanotechnology.

But where do intellectual property rights fit into the technological development in our new economic structure built on information technology? I submit that these developments will come about because of our dynamic patent system that has been able over 200 years to absorb new technologies and has responded vigorously to technical advances. Our intellectual property system is vibrant and resilient. It will continue to add dynamism to our new information-based economy because the dialectic balances of providing patent protection for these new technologies do not limit economic progress. Patents do not interfere with economic progress. To the contrary, they add to the common knowledge, allowing broader dissemination of information for the benefit of the public.

I think you, as the next generation of practitioners shall have to deal with these issues. My time has passed. All I can do is judge individual cases on the law and the facts of each. But you will be in the midst of this new technological revolution and these are your new horizons. Thank you very much.

