

# The University Researcher and Patents

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## 1. The Era of “Patenting Everything”

Aiming to become an “intellectual property (IP)-oriented nation,” the Japanese government, at the turn of the century, adopted IP as its core strategy for industry revitalization and started applying stronger pro-patent policies. Their intention was to follow the example of the United States, which was in the past on the verge of industrial decline, but had recovered after the 1985 Young Report and its subsequent IP policies.

However, beefing-up IP protection does not always bring about the most desirable results. Actually, as illustrated below, the United States is now facing troublesome issues due to excessive implementation of such policies.

The main US strategy was to protect its inventions by using “pro-patent policies,” which were powerfully advanced after the establishment of the Court of Appeals for the Federal Circuit (CAFC) in 1982. It is said that the CAFC contributed to the dramatic increase in US patent numbers, and also raised the eyebrows of many engineers because of its generous rulings toward software patents, which became widely accepted by 1981.

The “success” of software patents led the way to genetic patents, medical procedure patents, and business method patents. As Professor Pamela Samuelson (University of California at Berkeley, School of Law) predicted, once software are found to be patentable there will be no way to keep other prospects from following suit.

Despite numerous objections to the introduction of such systems, many of them have taken root in society, and now the patent seekers are waiting their turn to expand the scope of patent protection into such fields as education methods, linguistics, information, and social systems. Here we can see the advent of the “Patenting Everything” Era.

The general reader may find this a little exaggerating, but from the viewpoint of an engineer, who has over 15 years of experience in software patent issues, this alarming matter is not groundless in any way. Lawyers are making thorough step-by-step preparations to establish a fully equipped patent system. One symbolizing example of this movement is the business method patent that was granted in November 2002.

The U.S. Patent and Trademark Office (USPTO), after five years of examination, granted a Net-venture, the DE Technologies, Inc., a business method patent (No. 6, 460, 020) for “an international transaction system for operation over the Internet/Intranet.” This act was severely criticized from all quarters because, although the patent involved the standardization of all international trade transactions through comprehensive software, the only novelty about it was the usage of the Internet in performing well-established methods.

Two years prior to the issuance of this patent a Trilateral Technical Meeting of the JP, US, and EU Patent Offices was held in Tokyo in June 2000. Here the JP and EU officials jointly lodged a strong protest against US patent policies and extracted a concession for the patenting of computer implemented business methods. From this point on, a business method that merely places a known human transaction process on the Internet by using technology that is neither novel nor inventive would no longer be eligible for patenting.

This trilateral agreement had the effect of settling down the business model patent boom, but from watching past US patent strategies, I knew that it was still too early to be assured. Although there is still a possibility that the appellate court will declare the DE Technologies patent null and void on grounds that there is no technical novelty, the issuance of the patent is proof enough to show that the USPTO has not changed its “patenting everything” strategy.

To this day I have taken various opportunities to interview experts on the topic of software patents and its extension — business model (method) patents, and found that many engineers were against these patents. The most notable fact is that the more outstanding the achievements of the engineers are, the stronger they are opposed to the current software patent policy of the administration [1, 2].

However, in Japan, probably because of the lack of large software patent disputes, there were very few people who openly criticized software patenting. Recently, this situation is slightly changing with the success of Linux and the dissemination of open-source software. Among small and medium sized software companies there is a growing concern over software patents litigation that was triggered by the SCO Group/IBM dispute, and the Internet is brimming with criticism over the US patent policies for software and business method patents.

In the following chapters, from the viewpoint of a university scientist in the research field of mathematical engineering, I would like to state my opinion in regard to the major issues surrounding the software and business model (method) patents.

## 2. From “Patenting Everything” to “Patenting Anywhere”

In October 2002 there was a CAFC holding that shook the very foundation of the University community: the case of *Madey v. Duke University* [4].

In the United States, just as it is stipulated in article 69 of the Japanese Patent Law, experimental use of patents for academic purposes was exempt from infringement claims and such research activities would normally fall in the scope of the experimental use defense under US law. In this case, however, the CAFC dismissed the district court’s ruling and held that:

regardless of whether a particular institution or entity is engaged in an endeavor for commercial gain, so long as the act is in furtherance of the alleged infringer’s legitimate business and is not solely for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry, the act does not qualify for the very narrow and strictly limited experimental use defense. Moreover, the profit or non-profit status of the user is not determinative.

This means that nearly all of the future technical researches that are conducted at research institutions such as universities will be subjected to the usage of patented rights. A new system of “Patenting

Anywhere” is born, which strengthens the “Patenting Everything” system.

The limitation of experimental use defense in the United States has gradually become narrower in the aftermath of the court decisions of *Roche Products Inc. v. Bolar Pharmaceutical Co. Inc.* (1984) and *Embrex Inc. v. Service Engineering Corp.* (2000). The Duke University case may well have been a *terminus ad quem*, which a lawyer would have anticipated to happen in due course.

As this CAFC decision was unanimously made in full court, a reversal is highly unlikely for the foreseeable future, and seeking Supreme Court intervention is also said to be beyond hope.

Through the implementation of the pro-patent polices since the 1980s, the patent system has thus been tuned to perfection. The dream of the strong advocate of US patent strategies, Professor Donald S. Chisum (Patent Law, Santa Clara University) and the fear of computer scientist Allen Newell have both become reality, and the long-maintained system of civilization now seems to be facing a serious crisis [7, 8].

Software developers have been voicing their concern about the “runaway” conduct of the patenting parties, but it never occurred to the university researchers that the patent holders would come barging into the campus (Most of them are still unaware of this).

It so happens that, in the Constitution of the United States, there is no article that guarantees academic freedom. In the United States a university is a business and it is normal practice for the professors to make money with their patents through their own companies.

Therefore, it seems to be a weak argument to insist that all university researches should be exempted from claims of patent infringement. But nevertheless, to most of the university community, the aforementioned decision would probably appear to be a self-righteous act on part of the lawyers, which completely lacks the viewpoint of university researchers.

If a researcher plans to obtain his/her own patent to start a company for financial gain, it is hard to give special treatment based on an experimental nature of the use of patents. However, as far as I know, such researchers are a minority even for US universities. In the field of software and business methods, most of the researchers still place themselves in the world of academia, and disclose their inventions, not as patents, but in the form of academic papers.

The experimental use defense to patent infringement is vital for the development of technology. Take for example, the Narendra Karmarkar-patent filed by the

AT&T Bell Laboratories, which intended to monopolize all the rights of a highly general algorithm of the interior point method for linear programming. If the Duke University ruling had taken place in the 1980s, university research activities would have been inhibited and subsequent technological breakthroughs would not have occurred. Considering the many energy/resource and environmental solutions that have been provided by such technologies, it is not difficult to recognize the appalling significance of the Duke University decision.

For software researchers this decision may have a fatal impact because the ambiguity of patent claims in this field will frequently cause the researcher to unintentionally infringe the patents. For the time being the lenient operation of the law is keeping these issues from hitting the limelight, but what will happen once the legislation is strictly applied is anyone's guess.

For researchers in Japan there is little to worry about if the effects are limited to the United States. However, with the upcoming incorporation of national universities and the further promotion of patenting in Japan, it is likely that the same standards for experimental use will be enforced in the name of harmonization with the United States. To counter such external pressures, Japanese researchers should start contemplating their own persuasive arguments.

If university researchers are to uphold their "academic freedom" they should take this issue more seriously. Leaving this matter to lawyers who feel comfortable with the Duke University Decision would surely result in a tactless accommodation of possible US demands.

What can we employ as concrete measures then?

To begin with, Japan should, in an attempt to induce a new trilateral agreement, collaborate more strongly with the EU to protest against the "Patenting Everything" and "Patenting Anywhere" strategies of the US government. To achieve favorable results in the above situation the researchers of JP, EU, and US all need to join forces with the (conscientious) legal profession.

In the event of a deadlock, Japan should take action to establish its own explicit rules, in which case it will become absolutely necessary for us engineers to voice our opinions more actively.

One solution, from the viewpoint of an engineer, is to divide the researchers in two groups for a given number of years. The first group (type A) will waive their experimental use defense in return for patent ownership. The second group (type B) will give up their patent application practice to keep (as before)

their experimental use exemption status.

University researchers dealing in software and business-method researches generally dislike being restricted by the patent system, so it is my guess that most of them will choose type B.

From the very beginning, it was standard procedure in software science to update or build upon other people's ideas. The more exceptional a researcher, the more he/she knows that studies are based on achievements of predecessors. If most of the outstanding software researchers are to select type B, the status quo in Japan will hardly change, and on seeing this situation, the top US software researchers may start moving to Japan to secure their research freedom. Maybe this will become a kamikaze for our country's software industry.

As for business model patents, if the technical dimensions of the patents are properly reviewed, their situation will be no different from that of software patents. But if the technical claims are unfit for patents, such as they were in the case of DE Technologies, the circumstances will certainly change. We will have to start dealing with people with a completely different way of thinking.

It is clear how much social disorder an inappropriate business model patent will cause, from the example of the Amazon.com's one-click online ordering method patent, which brought the largest bookstore chain Barnes&Noble.com to the brink of bankruptcy. In order to prevent such cases from occurring in Japan, we must call for the continuance of rigorous technical reviews by the Japan Patent Office, in which non-inventive business model patents will be rejected.

### 3. Performance Evaluation of Researchers using the Patent System

Another question that has been brought to attention in this pro-IP environment is whether a quantitative analysis of a researcher's patenting efforts, in addition to academic papers, should be used to evaluate academic performance.

Currently, to measure academic performance, the quality and quantity of the researcher's academic papers are put to use. After a paper is submitted, referees that are anonymous experts in the author's academic field will conduct a peer review under a preset standard, and only those that are deemed to have novelty with accurate facts will be published.

Each paper that is published in a journal equipped with a reviewing process is counted as one achieved paper in most academic disciplinary areas. To prevent

this number from having wings of its own and to quantitatively measure the paper's influence, the ISI (Institute for Scientific Information) Citation Indexes and the Impact Factor have been introduced.

For academic papers, such authoritative indicators exist to evaluate the researcher's performance. So, what means are there to measure patenting efforts?

The main purpose of the patent system is to provide an incentive for technology developments that are novel and useful to industry by helping them recoup their investments. The primary yardstick in this case is namely money. When the Tokyo High Court ruled that the Karmarkar-patent lawsuit "held no merit," the word "merit" stood for "financial benefits."

As for the reviewing process, there is an essential difference between patent offices and publishers of journals. In patenting, even if there may be some doubt about the novelty and inventiveness of the patent that is under review, the patent offices will first grant the patent rights and listen to objections or invalidation trials later on. The current patent system is based on the assumption that an opposing party will sue for annulment. In the United States the average cost for such lawsuits are in the order of millions of dollars. Even in Japan, we are faced with a sum somewhere close to ten thousand dollars per case.

Under this costly system, "useless" patents that are not worth suing for are left alone. Therefore, there are tons of patents out there in the world that are non-novel, uninventive, and unsuitable for making money.

Another drawback for using patent indexes: A fairly talented researcher can easily divide up the ideas in a single academic paper, flesh them out here and there, and get away with three or four patents. This is because it is easier to pass a patent examination than to qualify a paper in an academic journal. Consequently, it shows how extremely difficult it is to compare the two systems — paper and patent — using the same index methods.

A patenting system is based on monetary compensation, whereas a academic system is based on honor and fame; combining the two standards to create a convincing index is quite an impossible task, especially in our country.

#### 4. Voices of the Engineers

On many occasions, from an engineer's point of view, I have been voicing my opinion on various IP issues, especially in connection with software and business method patents. I strongly believe that we need more engineers to take keen interests in these issues to

reflect their opinions on the reform of the IP system, which is currently being led mainly by the legal profession.

However, as I had expected, the reaction of engineers towards this matter has been extremely slow. Asking engineers to take interest in legal matters is like asking for the moon. To begin with, they do not have any interest in social problems, and even if they do, they say they are too busy with work to be able to spare any time.

Getting involved in legal matters at that time did not have any benefit to the researchers in terms of research performance, and made them run the risk of being labeled as a dropout from the engineering community. Furthermore, they hardly had anywhere to voice their opinions.

To lawyers, an engineer who is without opinion is the same as an engineer that does not exist. Even if lawyers were conscientious, they would have no way of knowing what was on their minds.

So as it is noted in the "White Paper on Science" [5], even though the silent engineers are supporting the country with their inventions, they have to go through life as worker ants at the bottom of the social pyramid.

The IP system — notably the patenting system — is a big issue, which surely has a decisive impact on the activities of engineers. But after witnessing the engineer's evasive attitude in this matter, Professor Lawrence Lessig (Stanford Law School) deplores in "The Future of Ideas (Japanese title: Commons)" [6] that engineers will still not stand up for themselves. And through the words of Niccolo Machiavelli, he explains that "their support is indifferent partly from fear and partly because they are generally incredulous, never really trusting new things unless they have tested them by experience."

However, it did not take more than a year for this situation to change. Amid the changes of the surrounding environment, several of the groups of engineers have swung into motion.

The first among these groups is the IEEE (Institute of Electric and Electronic Engineers). In the lawsuit of Festo v. Shoketsu, which was fought for nearly ten years, an association of 340,000 engineers submitted an amicus brief that strongly affected the Supreme Court's ruling of May 2002.

The point in dispute was the definition of patent infringement; namely, the difficult problem of determining when two technologies are deemed the same. There have been two opposing concepts in the United States regarding this matter. In the "complete bar" approach the accused invention is considered an

infringement only when the applied technology is within the literal scope of the patent claims. On the other hand, the “flexible bar” approach is a scheme to capture infringes, which may be beyond literal terms, but are still very similar or equivalent to the patented invention.

So where do we draw the line to define the scope of similarity? This is a problem that has been occupying the minds of the legal professions for a long time. The Supreme Court, in its *Festo* decision, adopted the “foreseeable bar” approach that was proposed in the IEEE-USA’s amicus brief as a scheme to cope with this problem. For details of the trial please refer to [3]. What I wish to stress here is the fact that a proposal, submitted by a group of engineers in collaboration with (technically minded) lawyers, succeeded in giving a significant clue to the solution of this difficult legal issue.

The second group of engineers consists of European engineers that have been organizing rallies since last year in protest to the EU patent policies. Under the leadership of the United Kingdom, which had full support from the United States, the European Parliament was deliberating a directive to facilitate the installment of software and business method patents. The passage of this legislation would mean the advent of the American “Patenting Everything” Era in Europe.

It was the Foundation for a Free Information Infrastructure (FFII), a European alliance of Linux engineers, that stood up against this patent inflation movement. Founded in 1999, it was a deviant group of 10,000 to 20,000 members in the spring of 2002. But by July 2003 the membership exceeded 150,000, and their protests resulted in the temporarily postponement of the vote on legislation. Their supporters are still growing in number and as of January 2004 they are an organization of more than 300,000 members.

Holding a large rally in Brussels, FFII urged the members of the EU Parliament not to yield to the pressure of the United States. As a result to this the directive was rejected in October 2003 (This movement was covered daily in the European media, but not a single word was printed in the Japanese newspapers).

To a software patent promoter this would surely symbolize Europe’s backwardness. But even in the United States there are many people who support this movement. Unlike large companies armed with substantial patent portfolios, small and middle sized software companies are vulnerable to this pro-patent policy and some have to even move their business base offshore in order to survive.

The third example of this new movement is seen in Japanese engineer groups. In 2002 the Intellectual Property Association of Japan (IPAJ) was established to provide a forum where engineers may exchange their views on IP issues. Researchers can now submit, through this institution, their studies on legal matters that will be evaluated as academic performances (This means that this paper will also be counted as a formal academic paper). The fact that 1500 engineers and journalist attended the 2003 Research Presentation of IPAJ tells us the height of interest in this matter.

The Transdisciplinary Federation of Science and Technology was also organized in 2003 by interlinking forty academic institutions. Each institution delegated a member to the Intellectual Property Committee of this federation, which would have been impossible for an individual institution to stage, considering the size of the talent pool. It was only made possible after the establishment of a federation of more than 60,000 members.

As it was in my case, engineers could only acknowledge the presence of the IP problem through their own experiences. I now look forward to the day such assertive engineers start rebuilding the lawyer-driven society by using the Internet as one of their main weapons.

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