

A History of Patent Law

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I. Early Patents

The earliest form of patents might have existed in the 500 BC in Sybaris, Greece where monopolies were granted to new dishes for a period of one year. Some even contend that the patents originated in the Roman Empire where guilds existed, but its uncertain whether the guilds in that era followed such a system as they existed primarily for social and religious purposes. The guilds in the Middle Ages developed in the context of the market economies that existed in the cities. Maybe the proprietary attitude developed to safeguard the craft knowledge which had attained widespread reputation outside the region, thus increasing the commercial value of the craft. The, the guild system followed a system of apprenticeship, which facilitated the process of imparting the techniques of the craft. Thus it can be regarded as communal property, rather than a monopoly held by an individual. The craft developed within the guild and was shared by all the craftsmen of the guild. For example, the Venetian glassmakers had reputation for glassmaking during the Renaissance time. Glassmaking was strictly restricted to guild members and was closely controlled by them. There were regulations as to working days, apprenticeship, technical specifications, quality of the glass, ingredients to be used. As the reputation of their craft increased the commercial value also increased, with it the realization that the craft must be strictly forbidden from being exported to other parts of Europe. Thus, the earliest forms of monopoly emerged in the form of a communal property, restricted to a region and the guild. Patents could have emerged out of the need to develop new industries within in the realm. The need for increased revenue, prevailing high taxes meant that the royalty could fill their coffers by allowing foreigners to practice new art within the realm. Protection of the trade, tax incentives may have served as inducements to lure the foreigners to introduce new industries. They were to be granted exclusive rights to practice their art for a certain period of time. Although, it is certain that the genesis of the patent system originated in Italy, there is some ambiguity as to whether it began in Venice or Florence as Filippo Brunelleschi of Florence had invented a new kind

of boat in which heavy loads could be effectively hauled over the river. In 1421, the Gentlemen of the Works requested from the Lords of the Council of Florence an exclusive privilege for Filippo Brunelleschi to make and use his invention on the waters of Florence for three years. Quite a few patents had already been granted prior to 1474 when Venice came up with its first patent statute, traces of the modern patent law could be found in it: "We have among us men of great genius, apt to invent and discover ingenious devices; and in view of the grandeur and virtue of our city, more such men come to us very day from divers parts. Now, if provision were made for the works and devices discovered by such persons, so that others who may see them could not build them and take the inventor's honor away, more men would then apply their genius, would discover, and would build devices of great utility and benefit to our commonwealth. Therefore:

" Be it enacted that, by the authority of this Council, every person who shall build any new and ingenious device in this City, not previously made in our Commonwealth, shall give notice of it to the office of our General Welfare Board when it has been reduced to perfection so that it can be used and operated.

It being forbidden to every other person in any of our territories and towns to make any further device conforming with and similar to said one, without the consent and license of the author, for the term of ten years.

And if anybody builds it in violation hereof, the aforesaid author and inventor shall be entitled to have him summoned before any magistrate the said infringer shall be constrained to pay him [one] hundred ducats; and the device shall be destroyed at once.

It being, however, within the power and discretion of the Government, in its activities, to take and use any such device and instrument, with this condition however that no one but the author shall operate it."

The system envisages concepts of novelty, registration of the new device, term of exclusive right, infringement of patents as well as compulsory license. In the next two centuries the system of patent monopolies had spread across Europe. England being prominent among them developed the system. There are records to suggest that letters patent existed in England prior to 15th century and the

letters patent developed on its without any influence from the system that existed in Venice.

II. UK PATENT

The English patent custom prior to the Statute of Monopolies is less understood. It is vital to understand when and how the need for patent monopolies arose. From its inception up until the 17th century it was regarded as a privilege and had no roots in the common law. The earliest form of patents issued in England would resemble the charters granted by the Kings permitting the conduct of business in the region. There were Royal charters, Letters Close and Letters patent. Letters close were used to instruct private individuals, whereas letters patent, the public. All the instructions and directives were recorded in rolls. Charter Rolls, Close Rolls and Patent Rolls were used to record the various types of state papers. Records suggest that Patent Rolls have been since 1202. Blackstone states that: "The king's grants are also matters of public record. These grants, whether of lands, honors, liberties, franchises, are contained in charters, or letters patent, that is, open letters, literae patentis (so called, because they are not sealed up, but exposed to open view, with the great seal pendant at the bottom; and are usually directed or addressed by the king to all his subjects at large)".

With the emergence of the guild system in England, group monopolies came into being. These guilds had obtained exclusive right to sell certain goods within a region. Outsiders could not trade in that region but the members of the could compete with each other. The state sanctioned monopolies seemed to be acceptable to people as it lead to quality products and regulated prices. These guilds were under the control of the municipality. The rules of practice, the price of the goods, wages and working conditions were decided by the guild. This was kind of a regional monopoly which did not apply to the whole of England. It limited the expansion of the guild to other parts of England as similar guild existed elsewhere. This was an impediment in terms of national growth specially with the expansion of manufacturing sector and increasing trade. Thus, the local phenomenon was nationalized and the group monopoly gave way to individual monopolies. To encourage manufacturing the crown used to grant certain privileges to certain native inventions and new imports. The privileges were short of a

monopoly, offering protection and franchises to the inventor or introducer of a new art. But, in order to attract foreign artisans to practice their art and train the locals, the Crown resorted to grant privileges to the artisans which allowed him to practice his craft exclusive others for a limited period of time, all the while training the locals in this craft. Blackstone writes: "The crown's prerogative to issue letters patent was a central tool in bestowing privileges upon individuals in the furtherance of royal policies. When the crown thus wished to buttress the realm's lagging industrial development at the end of the Middle Ages, the issuance of letters patent was central to enticing tradesmen and industrialists to come to England." Letters patent were granted by King Edward III in the fourteenth century, protecting the trade foreigners willing to practice their trade within his realm and train his subject. John Kempe of Flanders was issued a letters patent in 1331 to practice his trade in England. Henry Smyth was granted a letters patent in 1552 to make Normandy glass subject to condition that he instructs others to make such glass during the such period as a the letters patent subsists as well as sell at a reasonable rate. He had the exclusive right to produce the Normandy glass for a period of twenty years. The grant specified that no person other than the person licensed or authorized by Henry Smyth could produce glass.

It is interesting to note that the Crown refrained from granting privileges to practice pre-existing works and mere improvements as it would hurt the existing trade. Bircot was refused letters of patent for a method of melting lead ore. It was considered as an improvement over the existing practice. This remained as a law for several centuries. Thus it can be safely concluded that letters patent is granted only if a new trade unknown within the realm is introduced in the state or a new trade not in existence before its invention. But, it can be observe that during Queen Elizabeth's regime, letter patent were granted even over well established trade.

1. The era Queen Elizabeth

Queen Elizabeth in the early years of her reign issued letters patent to encourage foreigners to introduce new manufacturing product and technology in England. Her policies seem to attract the foreigners. But in the latter part of her rule she used the same system to grant patents even on well established trade. The abuse of letters patent provoked the Parliament to legislate against such

monopolies. She managed to pacify them by assuring them that such letters patent will not be issued any further. The letters patents issued during this period seemed more like monopoly grants rather than privilege grants. Although monopoly was generally abhorred, it was not regarded as illegal if the good to the realm could be demonstrated. The crown slowly seems to shirk the responsibility of introducing the new trade by shifting it upon the recipient of the letters patent. Prior to this, the crown was responsible for the administration of the earlier privilege patents as a result the new industry was subject to control of the crown. Thus, crown had power to not only grant but also decide the disputes arising from the acts of the recipient

Early in her reign she made an effort to stimulate domestic production of goods imported from abroad thinking that this would help increase the revenue as well as increase her power relative of other states. To attract the superior continental technology from Italy, Germany etc. she assured them full protection of their produce, the grant of a patent monopoly appeared to be the most effective way to lure the foreigners. But the grant of monopoly came with strings attached to it. The new industry was to be introduced within a stipulated time, depending upon the working of the new industry the patent would be continued. Failure to introduce the new industry would result in withdrawal of the grant. Probably, the modern day working of patents might have emerged from the practice in the Elizabethan era. Moreover, the grant obligated the recipient to train the native artisans to practice the art. This was clearly used to enable the local artisans to pick up the new art and employ it after the expiry of the term of the grant. The recipient of the grant was compelled to employ English artisans to achieve the above objective. A number of patents were granted to foreigners during this period. Jacobus Acontius, an Italian is said to be the first to have made petition to the Queen citing the reasons for a grant of monopoly to him which was granted a patent in 1565. Although, monopoly was considered as contrary to the public interest, there is no record to suggest that the people came out against it during the early years of her reign. The grant of a monopoly seemed to have worked perfectly for her. But reckless grants of monopoly over flourishing trades and the exploitation of such grants resulted in increased prices, which irked her subjects.

Some historians suggest that she wanted to reward her faithful servants but hard on cash, she resorted to use the existing system to grant monopolies to those faithful to her. These were granted by the Crown in the form of letters patent authenticated by the Great Seal and addressed to the people at large. Those who received such patents exploited it to the hilt by selling it at higher prices. The grant included salt, iron paper, cards, drinking glasses etc. This obviously prevented the traders from carrying on their trade and also resulted in high prices of commodities. David Hume in his history of England says, "these monopolists were so exorbitant in their demands that in some places they raised the price of salt from sixteen pence a bushel to fourteen or fifteen shillings." It is recorded that she granted more than 52 patents during her regime. Once such grant to Darcy over playing card, set the momentum against odious monopolies which ultimately lead to the Statute of Monopolies of 1624 during the reign of James I. The case of Darcy, more popularly known as the Monopolies case stood as a landmark case for the coming centuries. b. Odious Monopolies

Queen Elizabeth's abuse of letters patent created a flutter, drawing the attention of the Parliamentarians for all the wrong reasons. The grant of monopoly over the making and selling of cards to Darcy added fuel to the existing discontent. She could no longer cover up her acts under the pretext of public good as it was evident that monopoly was being granted over existing trade. Affecting the livelihood of several traders dealing with the same goods. Elizabeth defended her royal prerogative in issuing letters patent as "the chiefest flower in her garden and principal and head pearl in her crown and diadem. The unabated use of her chiefest flower resulted in act of 1624 against such monopolies." It was perhaps inevitable that the issue would come to be raised in Parliament that the crown would just as inevitably take it as an attack on the royal prerogative. The queen's response was sharp, she claimed that certain "audacious, arrogant, and presumptuous" members of Parliament were out to trim her majesty's "chiefest Flower" and that her royal prerogative should not be called in question to determine its validity.

The case of Darcy v. Allin, popularly known as the Case of Monopolies is regarded as the first case wherein patents were viewed as a legal right of the inventor rather than the royal prerogative. It is interesting to note that the judges resorted to

verbal jugglery to avoid commenting on the royal prerogative and instead propounded the right of the inventor.

The playing card monopoly granted to Edward Darcy in 1598 facilitating Darcy's complete monopolization over all manufacture, importation and sales of playing cards, added fuel to the fire. Darcy did not hesitate to enforce his privilege; he appealed to the Privy Council in 1600, for instance, to do something about violators of his monopoly grant. The Council responded by declaring that all those in contempt of the royal prerogative shall be sent to the prison. There was no examination of the kind of monopoly power granted to Darcy, although many alleged that he had monopolized a well established trade. The Council avoided ordering anything against the royalty as they might have felt that the royal prerogative must not to be limited in any manner.

The monopoly on the importation, manufacture, or sale of playing cards had prevailed in one form or another since 1576. A patent had been originally granted to Bowes and Bedingfield in 1576, reissued in 1578, and in 1588 reissued to Bowes alone. Bowes died before the full term of the patent had expired, and in 1598 it was reissued to Darcy with a term of 12 years. There were widespread infringements which resulted in actions against the infringers. The Privy Council seemed determined to uphold the grant despite opposition to it. Firstly, a committee was set up by the Privy Council to aid, supervise and enforce the patent. There were numerous suits before the Council as well as counter suits for trespass of their property. Alen happened to be one such who joined the countersuit and he was threatened to be charged with infringement if he continued to prosecute his suit against Darcy.

The Argument in the case was much more complicated, Coke who was the Attorney General argued on behalf of Darcy. Allen argued if the monopoly would be deserving in case of anyone who would bring a new trade into the realm as it would aid in furtherance of trade that never existed in the realm, moreover he might use his wit in inventing it. In such instances a grant of a monopoly patents for a limited time would enable the others to learn the trade. Such monopoly would be appropriate as it does good to the commonwealth, otherwise not. Allen choice of words seemed like he took great care not to antagonize the royalty. Probably the statute of Monopolies was based on these lines. A look at the modern patent law also suggests that Allin's arguments involve the

concepts of novelty, working of the patent, term of the patent as well as the argument that the patents are for the larger good of the society. Probably Allen intended to suggest that patent monopolies should not be granted over well established trade or art. He cited the essential conditions laid down in the first monopoly grant to Smyth and followed by Queen Elizabeth during the first half of her reign. He argued that the crown may grant a patent for a reasonable time to a man who "brings a new trade into the realm" by "his own charge and industry" and through "his own wit or invention" "until the subjects may learn" how to practice the trade themselves. He argued that Darcy's patent "doth but take the trade of making and selling of cards from many persons, and giveth that trade to one, which is unlawful." Thus, he reiterated the law governing the issuance of letters patent for inventions. It is interesting that given the circumstances, he could argue against the monopoly grants and the courts didn't want to either. There was no discussion at any point in the case as to whether monopoly was in accordance with the common law.

Although Coke argued on behalf of Darcy he later reports that such grants of monopoly was against the freedom of trade and the common law. He condemned it as a dangerous innovation and being against the law. He regarded it as an odious monopoly. It is important to note that the result of case is not of much relevance but the opinions expressed on monopolies whether in the arguing for the case or expressed later (in case of Coke). Monopoly was stated to be prima facie against the common law, the statute law, and the liberty of the subject because it damages not only those working in the trade but all other subjects of the realm as well by raising prices, reducing merchantability, and reducing employment. These were strong words, but is not reflected in the outcome of the case as Darcy's monopoly grant was upheld.

In 1606, the Committee on Grievances of the Parliament petitioned for relief from the various patents of monopoly that had been issued. King James I promised to revoke some of the monopolies. Responding to the petition, James issued a declaration known as Book of Bounty which stated that monopolies were against the law of the land but the crown reserved the right to reward new inventions and the discretion to withdraw them in case of rise in prices due to such grant. It suggests that James made desperate attempts to retain the power to grant patents of monopoly. The

Book of Bounty did little as he continued to grant patents of monopoly in the same fashion. The issue snowballed into a case questioning the powers of the King.

The Clothworkers of Ipswich Case in 1615 marked the beginning of the end of royal prerogatives as it ultimately led to the Statute being enacted against monopolies. In this case, a group of tailors incorporated and chartered by King James to sell their services in Ipswich brought an action against an individual tailor who was not part of the corporation but nonetheless practiced his trade within the town. The case report reads: It was agreed by the Court, that the King might make corporations . . . but thereby they cannot make a monopoly for that is to take away free-trade, which is the birthright of every subject. . . . But if a man hath brought in a new invention and a new trade within the kingdom, in peril of his life, and consumption of his estate or stock, &c. or if a man hath made a new discovery of any thing, in such cases the King of his grace and favour, in recompense of his costs and travail, may grant by charter unto him, that he only shall use such a trade or trafique for a certain time, because at first the people of the kingdom are ignorant, and have not the knowledge or skill to use it: but when that patent is expired, the King cannot make a new grant thereof: for when the trade is become common, and others have been bound apprentices in the same trade, there is no reason that such should be forbidden to use it. Thus, it was held that the Crown might lawfully grant exclusive privileges in a new invention, a new discovery or a new trade within the realm, for a limited time.

The judgment lays down the doctrinal principles for issuing such patents. It clearly lays out justification for the monopoly: it enables the introduction of the new industry, training of the Englishmen in the trade, no monopoly patent can be issued for pre-existing industries and moreover it still considered the patents as royal privileges.

Even after the decision in the Ipswich case, grant of odious monopolies continued unabated forcing the Parliament to act upon it. In 1620–21, a review was conducted in the House of Commons concerning public grievances relating to patents of monopoly. During this period a bill against monopolies was passed in the Commons, but without success. Due to the agitation in Parliament, James declared void some eighteen patents and with regard to

some seventeen others relating to manufacture and importation (monopoly patents of invention) provided "that if any subject should find himself grieved, injured, or wronged by reason of any of the said grants, he might take his remedy therefore by the common laws of the realm or other ordinary courts." Thus, ultimately the crown allowed the courts to adjudicate on the grants. But, this did not prevent the Parliament from passing legislation against monopolies in 1624.

1. Statute of Monopolies

The monopoly patent had been carried to an enormous extent, stretching beyond its objective during the reign of Queen Elizabeth; the Statute of Monopolies put an end to this unabated abuse. Queen Elizabeth had taken it to new heights and she used her popularity to diffuse any Parliamentary intervention. James I, who succeeded her, continued to grant such odious monopolies, but was unsuccessful in diffusing the situation when it went out of control, thus paving the way for the new legislation.

The Statute of Monopolies enacted in 1623 became the basis of the patent practice in England for nearly two centuries. It succeeded in reiterating the common law principles in the statutory form. It rendered void all grants of monopolies and dispensations with one exception. The exception was the grant of 'letters patent for the term of 14 years' . . . of the sole working or making of any manner of new manufactures within this realm to the true and first inventor and inventors of such manufactures which others at the time of making such letters patent and grants shall not use, so as also they be not contrary to the law or mischievous to the State by raising prices of commodities at home or hurt of trade or generally inconvenient'. Monopolies and letters patent void The first section declared as contrary to the law of the realm and utterly void, all monopolies, grants, licenses, and letters patent theretofore made or granted, or thereafter to be made or granted, to any person or persons, bodies politic or corporate, of or for the sole buying, selling, making, working, or using of anything within the realm. Validity to be determined by common law Section 2 provides that the force and validity of all monopolies, and all commissions, grants, licenses, charters, letters patent, proclamations, etc. tending toward monopoly, shall be determined in accordance with common law. Not to exercise or use the grant... Section 3 provides that no

person, body politic, or corporation may use or exercise any monopoly right granted by any commission grant, license, charter, letters patent, proclamation, etc. Damages and cost Section 4 grants any party aggrieved by a monopoly the right to recover treble damages and double costs in the common law courts. Sections 5 to 14 set forth a variety of exceptions to section 1.

Existing patents are exempted

Section 5 exempted existing patents for inventions from the statute's prohibition on monopolies provided they met the same requirements set forth above and did not extend beyond twenty one years.

Duration of the letters patent

Section 6 enumerates that any declaration before mentioned shall not extend to any Letters Patents and Grants of Privilege for the term of fourteen years or under, hereafter to be made, of the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures, which others at the time of making such Letters Patents and Grants shall not use, so as also they be not contrary to the law, nor mischievous to the state...the said fourteen years to be accounted from the date of the first Letters Patents, or Grant of such Privilege hereafter to be made, but that the same shall be of such force as they should be, if this Act had never been made, and of none other.

As Lord Coke was one of the participants in the development of the law, he gives an elaborate exposition on Section 6. According to him for a patent to qualify under the exemption provided under Section 6 it must have seven properties:

(1) The term of the patent may not exceed fourteen years The term of fourteen years made sense as that would allow at least two apprentices to have been trained in the new industry. As the duration of apprenticeship lasted for seven years, fourteen years would enable to generation of artisans to be trained in the new art.

(2) The patent "must be granted to the first and true inventor Only the person who has played a part in introducing the invention within the realm must be rewarded. He does not elaborate whether the invention be made in England or abroad. Although, this

suggests that the first to invent should be granted the patent, the English patent system of the present day grants patent to the person who was first to approach the patent office. But, the American patent law is based on the first to invent concept.

(3) It must be of such manufactures, which any other at the making of such Letters Patents did not use This justifies the making of the Statute as the traders were petrified of grants of monopoly over uses already in existence. The grant of such monopolies had not only hurt their trade but also resulted in the increase of price. This property is very close to the concept of novelty and prior art. In the context of the Statute the prior art may have been restricted to what was known in England at the time of the grant.

(4) It must not be contrary to law It is not clear what Coke meant by contrary to law. Did he mean contrary to the patent law or the privilege granted by the Crown. His views in the Bircot's Case decided in Exchequer Chamber in 1572 lead to an entirely different understanding. According to this, "not contrary to law" in Coke's view, meant merely that no patent may be granted for an improvement in an existing manufacture. This happened to be the view held in England well into the eighteenth century.

(5) It must not be mischievous to the State by raising of prices of commodities at home Coke was of the view that the introduction of the new industry should not be inconvenient to the consumer, like the rising of the prices of the commodities. He said patent must be granted only if it was necessary and of some utility.

(6) It must not "hurt trade and (7) must not be generally inconvenient.

His sixth and seventh property reiterates conditions for the grant of letters patent in the early part of the Elizabethan regime. The grant of any patent must not put people out of work nor should it in general cause inconvenience to the traders.

It is noticeable that neither the Statute nor the interpretation of Coke refer to the grant of letters patent as a privilege. It does not refer the letters patent as a right in the property. There was no obligation on the Crown to grant letters patent to the inventor as a matter of right. It remained the discretion of the crown for nearly two centuries. Although some suggest that with the Statute of

monopolies the privilege became a right, there is no concrete evidence in this regard. It was only in the eighteenth century that the common law would come to recognize it as a special form of property known as a chose in action.

It can be said that the Statute became the foundation for the future development of patent law in England and elsewhere. It started, the transition of the English patent custom into a patent system based on a legal framework.

1. Specification and novelty

Although a specification as understood in the modern sense was not required, basic requirements about the description of the new industry may have been necessary to obtain a letters patent. Although, it is uncertain when the specification arose, there are records that suggest that the first specification arose some time around 1611. Sturtevant along with his petition filed a manuscript which described the working of the new industry. It is not clear as to whether a detailed working of the new industry was given in that manuscript, nevertheless it can be said that the earliest specification was made out of the inventors own volition. But the early specifications can be said to be nowhere as detailed as in the present times. It was only later in the eighteenth century that some officers began to demand a specification for the patent, which became a practice and a formal requirement to obtain a letters patent.

For the first 150 years of the English patent custom there was no requirement for a specification under the common law. It developed gradually over a period of 200 years. It initially started by way of individual inventor's own volition, but with the increase in the number of patents and the need to ensure that only new invention or industry is granted a letters patent, the common law officers thought it was appropriate to demand a written description of the invention, thus leading to a common law development of the above concept. There could also be reasons for granting patents without specification; if the royal policy was to introduce new industries that was practiced abroad or to re establish forgotten art, then granting patent was to see that other men learn the art over a period of time. So there was no need for specification.

Sturtevant, applied for a patent in 1611 along with a Manuscript describing the entire process. The objective behind filing a specification may have been to show that it was his own work, the other traders may know about his invention and that others may not file for a patent on the same invention. Probably some of these reasoning were used to justify the need for a specification. Five decades later the dispute over Grill's application for a patent lead to the future development of the requirement of a specification for a valid patent grant. Garill applied for a patent in 1663 for the sole casting of gold and silver Ingots for Lace, after his new invention. But the Goldsmiths and the wiredrawers of London his petition for the patent as it was already being practiced. Any grant of letters patent would hurt the trade and therefore it was in contravention of the Section 6 of the Statute of Monopolies. The king ordered the Privy Council to obtain a disclosure of Garill's new invention. The disclosure would enable them to ascertain whether the claimed invention was new method or already in practice. But, Graill refused to give a written disclosure of his invention. He either feared that others would learn about his new invention or probably it was already in practice. He was never granted a patent. Garill's case was the first such instance where the recipient of a letters patent was asked to disclose his invention on order to enjoy the patent privilege. Some authors have gone as far a regarding the specification as a social contract but I would be cautious in using such terms. I would rather say that with the development of the Statute of Monopolies which clearly envisages letters patent to granted only for new inventions, there was a need to ensure that the above objective was achieved and specification became necessary in the light of this context. Written disclosure of the invention would not only enable the common law officers to understand the new process but also serve as record in the future.

But after Garill refused to disclose his invention, the common law officers did not insist on the need for a specification, for nearly five decades, there is no record of any such demand. In 1711, Queen Anne granted a patent to John Nasmith, in which his patent grant states: "Whereas John Nasmith of Hamelton in North Britain, apothecary, has by his petition represented to us that he has at great expense found out a new Invention for preparing and fermenting wash from sugar "Molosses" and all sorts of grain to be distilled which will greatly increase our revenues when put in practice which he alleges he is ready to do "but that he thinks it not

safe to mention in what the New Invention consists until he shall have obtained our Letters Patents for the same. But has proposed to ascertain the same in writing under his hand and seal to be In rolled in our High Court of Chancery within a reasonable time after the passing of these our Letters Patents.” Nasmith assured that he would file in the description of his invention after the grant of the patent, he feared that if he did so prior to the grant, others might steal his invention. Nasmith like Sturtevant sought to file a specification in order to ensure that it was his invention, that it was a new invention, and that he would have the proper protection for his work.

After Nasmith, filing specification became a normal practice, although not mandatory, it was generally filed as they believed that their invention was more secure and that they could avoid their invention being called in for question. It became a common law practice only after 1752. Moreover, unlike the present day practice specifications were filed after the grant of the patent.

Liardet v. Johnson

The case of Liardet –Vs– Johnson, is a landmark case in the patent history as it lead to the development of concepts like specification being regarded not just as a supplement to the petition for the grant of a patent but it came to be regarded as a consideration for the grant of a patent. The earlier view that working of the patent was a consideration for the grant of the patent was replaced by the specification. With it, the concepts such as prior art might have evolved. In this case, Liardet filed suit against Johnson, alleging infringement of Liardet's patent for a certain composition of cement. Johnson defended himself by attacking both the validity of the specification and the novelty of the invention itself.

Liardet applied for a patent on the composition of a type of cement on the 3rd of April 1773. He received a patent and within four months of the grant he filed his specification. Liardet assigned his patent to Adams family, as he wanted to apply for an extension of term, the patent was reassigned to him. The parliament extended the patent for another 18 years provided that he filed a specification as to the improvement on cement. The patent was not reassigned to Adams but with the acquiescence of Liardet the Adams family continued to use it. In May 1777 Liardet and Adams

filed to suit praying for an injunction and the accounts of the John Johnson as he infringed upon the patent by making, imitating and counterfeiting cement specified in their patent. Johnson questioned the novelty of Liardet's invention and claimed that it was already in use prior to the grant of the patent. To establish this he showed two earlier publications which point to the same composition mentioned in Liardet's specification. He also contended that there was no significant improvement for the term of the patent to be extended. Probably, by showing prior publication he meant to establish that it was already in practice. This may be regarded as first instance where a written publication was used to prove prior use or knowledge of the patent granted. It is interesting to note that there were two trials in the case and the verdict was in favor of Liardet in both the cases. There is no official report of the trials and its unclear why two trials were required.

In the context of the evolution of the patent law, the most important aspect of *Liardet v. Johnson* was Justice Mansfield's instruction to the jury at the second trial. After instructing the jury that they should avoid two false extremes in their deliberations-- "to deprive the inventor of the benefit of his invention for the sake of the public" and to permit "monopolies of what is in use and in the trade, at the time they apply for the letters patent"--Mansfield instructed the jury that a plaintiff-patentee must meet three conditions in order to prevail. There are three grounds that must be made out to your satisfaction: 1. whether "the defendant did use that which the plaintiff claims to be his invention"; 2. "whether the invention was new or old"; and 3. "whether the specification is such as instructs others to make it" "within the sense of the Act, the condition of giving encouragement is this: that you must specify upon record your invention in such a way as shall teach an artist, when your term is out, to make it--and to make it as well by your directions: for then at the end of the term, the public shall have benefit of it. The inventor has the benefit during the term, and the public have the benefit after. But if the specification of the composition gives no proportions, there is an end of his patent ...I have determined, in several cases here, the specification must state, where there is a composition, the proportions; so that any other artist may be able to make it, and it must be a lesson and direction to him by which to make it. If the invention be of another sort, to be done by mechanism, they must describe it in a way that an artist must be able to do it."

This is one of the earliest instances where specification was regarded as an instrument that enables those skilled in the art to make and use the invention. I regard this as an extension of the earlier requirement that the inventor train the people of the land in the said invention. Probably this is one of the reasons historians regard specifications a consideration for the grant of the patent. But, I do not subscribe to the view expressed by some that it replaced the earlier consideration of working the patents within the realm. Even to this day working of the patent is an inherent principle of the patent law. It is also notable that Mansfield's instruction was more of a judicial construct as he does not cite any authority for any of the three points. As a result of this case specification not only became part of the patent law but it was important to file an appropriate specification which accurately discloses the invention.

Caveats

Caveats were being allowed to be filed before the sealing of the patents and it lasted for a period of three months. Caveat books were regularly maintained and checked whenever a new petition for the grant of patent was presented. Caveats aided in grant of a patent as it enabled any person who opposed the patent could establish that it was already in existence. If a caveat was filed before the sealing of the patent, a hearing would be held with the petitioner and the opposer. The person opposing would be allowed to state his understanding of the existing art and the petitioner would be allowed to elaborate on the nature of his invention. A decision would be arrived at whether to continue with the petition or reject it. The caveat system allowed the guilds, which were basically against the grant of letters patent, to oppose potential patents. The traces of the caveat can be found in the modern patent law which invites any opposition to the grant of patent.

Procedures to grant a patent

The grant of patents in from its inception was mired in numerous procedures. It is probably for this reason Dickens wrote a story on an inventor going through the procedure to obtain a patent.

The procedure entailed the following: (1) the would-be patentee prepared a petition to the crown together with an affidavit which

had to be sworn before a Master of Chancery; (2) the petition and affidavit were taken to the office of one of the Secretaries of State (later always the Home Office) where it was endorsed and referred to the law officers; (3) the endorsed petition was taken to the law officer's chambers and left for a report to be made concerning it; (4) if the law officer report was favorable, the petition and report were returned to the Secretary of State's office where a warrant was prepared, signed by the Sovereign and countersigned by the Secretary of State, directing the law officer to prepare a bill for grant of a patent; (5) the signed warrant was taken to the law officers where a bill was prepared on parchment incorporating and prescribing the exact wording to be used in the final letters patent; (6) the patent bill was then taken back to the Secretary of State's office where it was signed by the sovereign and countersigned by the Secretary of State, thereby being transformed into the king's or queen's bill; (7) the king's bill was taken to the Signet Office where a signet bill was prepared on parchment and sealed with the signet which authorized the Lord Privy Seal to prepare a Writ of Privy Seal to the Lord Chancellor; (8) the signet bill in turn was taken to the Office of the Lord Privy Seal where the Writ of Privy Seal was prepared on parchment and sealed with the privy seal; (9) the Privy Seal Writ was taken to the Office of the Lord Chancellor where letters patent were engrossed on parchment in the exact wording of the Writ, dated, and sealed with the great seal; and (10) the patent was enrolled from the Writ of Privy Seal on the Patent Rolls for the particular regal year. An additional requirement of preparing a specification became necessary in the latter part of the eighteenth century. e. Privilege to property right

It was uncommon to hear property rights over idea, at least a few centuries ago. It was inconceivable to think about property rights in ideas. As man stands on the shoulders of civilizations several millenniums old, suddenly he seems to have attributed property rights over ideas. It is easy to look at each idea in isolation, to claim rights over it, but we fail to realize that we have relied on a chain or a sequence of ideas to develop them. The history of the development of patent law suggests that at the time of its inception to up until the nineteenth century, it was regarded as a privilege granted to the inventor for introducing the new industry. It was only in the latter part of the eighteenth century that inventors began to think about it in terms of property rights. They tried to support this line of thought by basing it on natural rights theory propounded by

John Locke. Sadly, in the present times, property rights in patents are justified on this basis, but hardly does any one care to look at it in the context in which patents were issued in the early days.

The sixteenth century English view was that property rights were given "by the law of man, not by the law of God or reason" and therefore the state could determine the limitations under which property could be acquired. There was no inherent right to property. It is thus not surprising that there was no common law in favor of either patents or copyrights before or under the reign of Queen Elizabeth. Patents were issued under the royal prerogative as a grant of a special privilege conferred by the crown upon the patentee which did not belong to the citizen as of common right. At no point of time in the sixteenth and seventeenth centuries, it was regarded as a property. Even after the Statute of Monopolies repealed the royal monopolies, it was still regarded as a favour done by the Crown. There was no judicial view or opinion in favour of natural rights of the inventor, although judges at that time were said to be largely influenced by the natural rights theory. In 1769, Justice Yates appeared to deny at least a Lockean conception of a natural right of inventors by arguing "that the mere labour and study of the inventor, how intense and ingenious so ever it may be, will establish no property in the invention, will establish no right to exclude others from making the same instrument, when once the inventor shall have published it."

France was probably, one of the first countries to adopt the natural property rights in ideas. The preamble to the French Constitutional Assembly states that every novel idea whose realization or development can become useful to society belongs primarily to him who conceived it, and that it would be a violation of the rights of man in their very essence if an industrial invention were not regarded as the property of its creator." It is not known, how or why they came to believe property rights in idea.

German Economist Prince Smith in his report to a committee on patents rejected the concept of intellectual property as an untenable political fabrication. A middle position on the question of natural property rights was taken by Max Wirth. He defended the concept but he said that "inventions do not belong in the category of intellectual property, because inventions are emanations of the current state of civilization and, thus, common property. What the

artist or poet creates is always something quite individual and cannot simultaneously be created by anyone else in exact likeness, in the case of inventions, however, this is easily possible, and experience has taught us that one and the same invention can be made at the same time by two different persons: —inventions are merely blossoms on the tree of civilization.”

There was widespread rejection of natural rights of property in the invention, even in the hey days of the eighteenth century, but with advent of the industrial revolution and the spurt in the number of patents, inventors, patent lawyers and some academicians pushed this philosophy which appealed to the changing economy. f. James Watt and Co, the glorious years

Very often, large corporations, owners of numerous patents tend to hinder the technological progress as they control the entire industry. We don't have to go too far to demonstrate this, Microsoft's absolute control over the computer operating systems means that other software companies have to seek a license from Microsoft so that their product can run on top of the Microsoft platform. There are ample examples like GE's control over the electric lights, Bell Co.'s complete monopoly over the telephone industry etc. Similar control and monopoly could also be seen in latter part of the eighteenth century and nineteenth century. The rise of capitalism and the growth of corporations meant individual inventors had to sell or assign their patents to the corporations to earn money. The lure of the money and the prospects of a stable future attracted many inventors to work in these corporations. The growing patent pools enabled the corporations to dictate the industry. The real objective of the letters patent was lost some where in the transition. The turn of the nineteenth century witnessed a spurt in technological growth but at the same time due to the transition and the emergence of companies hindered subsequent innovations and improvements of intellectual works. A famous example of this occurred when James Watt, holder of an early steam engine patent, denied licenses to improve it to Jonathan Hornblower and Richard Trevithick, who had to wait for Watt's patent to expire in 1800 before they could develop their high pressure engine. Newcome had invented the steam engine which was largely used in the mining industry, but it was best with certain technical problems, Watt hit upon an idea to expand and condense steam in separate containers, which was ultimately patented. There

were several who were working towards the concept but the grant of the patent to Watt meant they could no longer employ their idea for commercial purposes. Further, although, Watt's patent had expired, the parliament extended the term for another twenty years even though there was no substantial improvement in his steam engine. This benefited his company Boulton and Watt Co., in extending its monopoly over supplying steam engine. At one time the demand was so much in excess of the supply that the company did not have enough skilled workers to meet the demand, they turned away some orders. The use of the steam engine increased after the expiry of the Watt's patent. But it has to be mentioned that inventions by William Bull, Richard Trevithick and Arthur Wolf had wait for the Watt's patent to expire, although they were developed earlier as they feared the same fate as Jonathan Hornblower. He had devised a superior and independently designed engine and had already started its production. Fearing a threat to their business Bolton and Watt went after him, using the patent system to their advantage they were able to stem the competition. Hornblower not only lost a costly legal battle but also landed up in the jail. Watt used the patent system effectively to ward off any competitor but this stifled innovation in the industry as Hornblower's case set a bad precedent for other inventors to commercialize it. Even Watt's invention was not perfect, James Pickard had solved the problem with his crank and flywheel combination, but Pickard couldn't adopt this because Watt held one of the crucial patents and vice versa. The cross patents prevented each other to put their patents into good use and they had to wait for each others patent to expire to incorporate their innovations. In fact, after his path breaking innovation, Watt spent more time in legal action in an effort to maintain his foothold over the industry. Watt remained ahead of the others not by superior innovations but by better exploitation of the patent system. By extending the term of his patent and preventing others from producing cheaper engines, he not only delayed the mass adoption of the steam engine but also hampered capital accumulation and economic growth.

James Watt was a great supporter of patents, said that "an engineer's life without patent was not worthwhile,". In a letter written in 1785 he expressed his thoughts on the motivations of inventors and the relationship of patents to those motivations. It is not too difficult to understand his position on the patents, it was an era where inventors struggled to make success out of their

inventions. He felt patents probably bailed them out of this situation by enabling them to sell their trade to the manufacturers without fear of others copying his invention. He said that, if our right to our patent should be taken away, or rendered illusive, we must drop any further pursuits of that scheme and apply ourselves to other businesses where our property can be more effectually guarded. According to him patents are a social good but by denying other inventors a license to work on his invention, he effectively prevented the technological improvement in the steam engine. There are ample examples of monopolies and oligopolies in the 19th century Britain. Some inventors even bought patents of others leading to a control over the industry, James Fisher, supplemented his own patents for lace machinery with the purchase of others until the trade united against his prosecution of infringements in 1847. In 1851 five of the largest Lancashire cotton spinners combined to purchase Heilmann's combing patent for cotton, and commissioned John Hetherington & Sons of Manchester to produce it for them. They licensed Hetherington to build machines for others and collected three fifths of the £500 purchase price as royalties. Around the same time, Chances of Birmingham and Pilkington's of St Helens persuaded James Hartley to license them under his lucrative patent of 1847 for rolled plate glass. Two syndicates of six and four manufacturers respectively, headed by the firm of Tomkinson & Adam, similarly monopolized the production of Axminster carpets through patents for power looms in the 1880s. Thus, history is replete with such monopolies which may have prevented other technological advances in their industry and, the notion of the property rights in inventions during the industrial revolution might have added more muscle to it. Interestingly enough, it is not too difficult to see why there was a controversy over patents during this time. g. The Victorian Britain and the patent controversy

The cost of securing a patent might have deterred inventors from going for one. Even at the peak of the industrial revolution, the costs were too high for any one to secure patents all over the kingdom. It would cost approximately £100 for England and Wales, £350 to include Scotland and Ireland as until 1852 separate patents had to be obtained for England, Scotland and Ireland. The total cost was enormous apart from the time taken to secure a patent. One had to go through a labyrinth of government to get it approved. The high cost of patent registration, the monopoly of certain

important inventions triggered off a controversy regarding the abolition of the patent system. Even at the height of the industrial revolution many inventions of undoubted technological importance were never patented. The hand-mule's progress from Samuel Crompton's garrut to the early spinning factories went largely unpatented. It is difficult to attribute any single major factor to this as it could be the high cost or the personal ideologies of the inventors or the values and the working environment might have prevented them from seeking patent. Some authors have directly or indirectly attributed that the technological growth during the industrial revolution might have been due to patent system as it encouraged inventors by rewarding them by protecting their invention from being imitated by others. Then why is it that the textile manufacturing which was the show case of British achievement came in for attack? It suffered due to lack of invention in this field. In 1872 a local news paper was writing of obsolete machinery and conservative ideas. Innovation in the coal mining had considerably slowed down in the first decade of the 1900's. Wasn't their enough incentives to invent?

For two hundred years the statute of the monopolies had not been amended, for several reasons like high costs, clumsy procedures and uncertainty in the applications of the patent law which ultimately lead to the review of patent law in England. Various groups were formed to obtain law more favourable to inventors, and considerable agitation was carried to Parliament and in the press. This provoked a counter attack from those who wished to see the patent system abolished entirely. In the latter camp were the influential London Economist, the Vice president of the Board of trade, some outstanding inventors of the time, members of the parliament and the representatives of manufacturing districts such as Manchester and Liverpool. This lead to a controversy (1853-1883) during the Victorian reign over the efficacy of the patent system. At this high tide of free trade, proponents of patent abolition questioned whether patents for invention should be exempted from the general proscription of monopolies, contending that patents provided an unnecessary incentive to invention, while obstructing innovative industrialists in the conduct of their business.

The advocates of patent system argued that patents were necessary as they believed that every man has a right to own his idea and that

society was morally obligated to protect this property right. They believed that patents were an effective way of protecting the property in ideas. Others supported it saying that it was the appropriate reward for the service rendered by the inventors to the society. Industrial progress was necessary and the inventions lead to such progress. But, without any security for the inventions, people would not be motivated to invent or disclose the invention to the society. Hence, to achieve the objective of industrial progress, society should grant patents to induce the inventors to disclose the invention to the society. There were many economists, lawyers, philosophers, politicians and traders who were against the patent system and they argued for the abolition of the patent system. About the same time, even the continental Europe went through the same turmoil. Holland had even abolished their patent law (1850's to 1890). A country like Switzerland didn't even have a patent law until the first decade of the twentieth century. Probably in the history of the development of patent law, this was one of the significant period wherein there was substantial opposition to the patent system, that too when the industrial revolution saw a spurt in innovations. Prince Smith a German economist argued that "inventions do not belong in the category of intellectual property, because inventions are emanations of the current state of civilization and, thus, common property. What the artist or poet & creates is always something quite individual and cannot simultaneously be created by anyone else in exact likeness, in the case of inventions, however, this is easily possible, and experience has taught us that one and the same invention can be made at the same time by two different persons: inventions are merely blossoms on the tree of civilization." Böhmert, an economics professor at Zurich, claimed that patents were now being more and more recognized to be "rotten fruits on the tree of civilization" and "ripe to fall." According to Simonde "the result of the privilege granted to an inventor is to give him a monopoly position in the market place against the other producers in the country. As a consequence the consumers benefit very little from the invention, the inventors gains much, the other producers lose and their workers fall into misery. He wanted all inventions to be immediately made known and immediately subjected to imitation by all the competitors of the inventors." R. A. Macfie of England, a severe critic of the theory of natural property rights in inventions, declared that "if there were any "natural rights" in connection with inventions it would be the inventor's "right to use his own invention. But just this right, he

argued, was frequently denied under the patent system: all too often an inventor would find himself barred from using his own idea because somebody else had obtained a patent on it; this might happen even if his idea were better than the patented one but was considered a version of it." As early as 1850 an editorial in the London Economist presented similar views as follows: "Before the inventors can establish a right of property in their inventions, they ought to give up all the knowledge and assistance derived from the knowledge and inventions of others. That is impossible, and the impossibility shows that their minds and their inventions are, in fact, parts of the great mental whole of society, and that they have no right of property in their inventions. Patents were "injurious to the progress of production and to the common welfare and, thus, illegitimate in the light of the principle of property rights."

Rogers says that those who started using the word property in connection with inventions had a purpose in mind; they wanted to substitute a word with a respectable connotation, "property. For a word that had an unpleasant ring, 'privilege' in the nineteenth century " According to Rentzsch. De Bouffler, people deliberately "construed the artificial theory of the property rights of the inventor" as a part of the rights of man. Instead of using terms like monopoly or privilege, if natural right is substituted in their place, it would receive immediate respect from the people as it was popular and well taken by the people.

Such arguments had an impact on the select committees of parliament and royal commissions which investigated the operation of the patent system in 1851–1852 in 1861–1865 and again in 1869 –1872. Some of the testimony before these commissions was so damaging to the repute of the patent system that leading statesmen in the two houses of the parliament proposed the complete abolition of patent protection. Lord Stanley, the chairman of the royal commission that inquired into the patent system in 1863–1865. On the basis of his inquiries he objected to the "principle of patents," as it was (i) almost impossible that the reward go to him who deserved it, (2) impossible that the rewards be in proportion to the services rendered, and (3) impossible to prevent great injury being inflicted upon others. The British patent commissions pointed out that there was a heavy social cost of the operation of the patent laws. Others argued that patents had a negative social impact as it caused diversions in the areas of

research. People who might be interested in one area of work might be induced to work in areas where the possibility of acquiring patents and profits are high, this they viewed diverted skills to other area, thus resulting in lack of innovation or progress in other areas.

A patent reform bill drafted on the basis of the 1872 commission's report provided for a reduction of patent protection to seven years, strictest examination of the patent applications, forfeit of patents not worked after two years and compulsory licensing of all patents. The bill was passed by the House of Lords. However, it was withdrawn later. Eventually the patent advocates managed to win because of the crisis in 1873 which lead to severe depression. For the rest of the 19th century and the whole of the 20th century, patent system has been developed and nourished by the big business conglomerates. They have gone to the extent of arguing that patents are necessary tool in the era of free trade.

. The privileges granted to inventors by patent laws are prohibitions on other men, and the history of inventions accordingly teems with accounts of trifling improvements patented. that have put a stop, for a long period, to other similar and much greater improvements. it teems also with accounts of improvements carried into effect the instant some patents had expired. The privileges have stifled more inventions than they have promoted, and have caused more brilliant schemes to be put aside than the want of than could ever have induced men to conceal. Every patent is a prohibition against improvements in particular direction, except by the patentee, for a certain number of years; and, however, beneficial that may be to him who receives the privilege, the community cannot be benefited by it On all inventors it is especially a prohibition to exercise their faculties and in proportion as they are more numerous than one, it is an impediment to the general advancement, with which it is the duty of the Legislature not to interfere, and which the claimers of privileges pretend at least to have at heart.

US PATENT HISTORY

The framers of the United States Constitution were already aware of the patent custom which was largely being practiced during the colonial rule. It is not surprising that the Us patent law in its infancy was largely modeled on the English Statute of Monopolies Act. The

practice influenced them so much that they decided it was the appropriate way to reward the inventors and encourage the advancement of science and technology. . It is still unclear as to the need for the Intellectual property clause in the Constitution. The first US Patent Act 1790 had some unique features like examination of patents, reduced patent fee, grant of patent to the first inventor.

It was not as if there were no opponents of the patent. Jefferson was one of the staunchest opponents so the patent system, especially during the early years of the patent law. He was very much concerned about the utility of the patent, the effects of monopoly and its ill effects on the society. There were states like Virginia, Maryland which had openly condemned property rights in idea. It is either unfortunate that we do not have any records of the opposition to the patent system (exclusive property rights in idea) during the discussions on the framing of the constitution or there was absolutely no opposition on this issue.

Over the years the courts have construed that the constitutional grant of power to Congress was mainly to promote the progress of science and useful arts, a founded public policy. There is almost no critical view of the judiciary regarding this aspect. Apart from the express reiteration that patents are not to be regarded as monopolies, perhaps the most interesting aspect of this statement is its movement from the premise of the constitutional purpose of patents to the conclusion that the property right is therefore to be protected. Whether or not the Constitution requires a liberal construction of patents, it has held that the intellectual property clause expressed no policy against the limits on the patent power

1. Colonial Rule Various states issued patents prior to the framing of the Constitution. The experience had a profound influence during the formulation of the Intellectual property clause and in the legislation of the first US patent Act. Patent custom involving exclusive grants of privilege for limited terms with respect to invention and importation existed in a number of the American colonies and states prior to the drafting of the Constitution. The patent system in the colonies had developed in parallel to English custom and there were two sources of authority, letters patent granted in England covering the American colonies and others granted by the royal governors in the various states. After the American revolution, the assemblies and legislatures continued to

issue the patents although they were not formally invested with such powers. At the time of the independence, American economy was primarily agrarian; manufacturing was restricted for local consumption. The grants were more for the local states and people were unsure whether it was worth all the trouble and the time, as a result the patents issued were far and few. Probably the framers of the constitution felt that these local grants must be extended at the federal level so as to encourage trade and commerce as well as prevent duplication of grants. They might have felt the need to clearly lay out the instruction in the constitution so as to bring about uniformity in the application and practice of the law.

2. Rumsey, Fitch petition

Madison was a great scholar and had served on the committee that had drafted the 1783 congressional resolution which included a recommendation to provide protection to authors and inventors. He was concerned that the lack of uniformity in the state laws concerning protection of literary works and inventions might hamper their growth. Consequently, it is not at all surprising that he proposed that Congress should have the power to grant copyrights for a limited time and to encourage the advancement of useful knowledge and discovery by "premiums and provisions." The latter proposal, although including invention within its ambit, is clearly not limited to invention. He even addressed the Congress that a legislation on protection of literary works and invention be passed at the earliest so that authors and inventors are not deterred by the fear of others imitating their work. There were several petitions by the inventors, addressed to the congress or to Madison on the issue of protection for their invention. These petitions posed several questions to the congress, there were several issues like whether the congress would pass separate laws or one generic law, whether the assignees and heirs be able to exercise the rights etc. In fact, these issues guided the Congress discussions on the matter. There was almost no debate about property rights in ideas and more discussions on the nature of the law. The first two petitions were presented and read to the House of Representatives on April 15, 1789. The first was by David Rumsey who sought protection for the books that he had authored. John Church was an inventor who sought protection for his inventions by vesting the rights of selling his invention in him, his heirs and assigns. The House appointed a committee to look into the matter which reported that "the committee have conferred with Mr. Churchman, and find that he

has made many calculations which tend to establish his position, that there are two magnetic points which give direction to the needle, that upon this doctrine he has endeavored to ascertain from a given latitude, and a given variation, what must be the longitude of the place; and having applied his principles to many instances in Cook's voyages, has found the result to correspond with considerable accuracy with the real facts, as far as they could be determined by the reckoning of the ship: That the object to which Mr. Churchman's labors are directed, is confessedly of very high importance, and his ideas on the subject appear to be ingenious: That with a view of applying them to practice, he has contrived a map and a globe, whereby to show the angles which are made by the real and the magnetic meridians in different parts of the earth: That he is also engaged in constructing tables for determining the longitude at sea upon magnetic principles: That the committee are of opinion that such efforts deserve encouragement, and that a law should pass to secure to Mr. Churchman, for a term of years, the exclusive pecuniary emolument to be derived from the publication of these several inventions.... On the subject of the petition of Doctor David Ramsay, your committee report it is their opinion, that a law should pass to secure to him the exclusive right of publishing and vending for a term of years, the two works mentioned in the petition." Thus, the committee had gone in detail to examine the invention of Churchman, its utility and established that he was the true inventor and he deserves the encouragement. It seemed like it was acceptable to provide protection to the invention as it was a means to encourage inventors. Why, exactly was it restricted to exclusive rights over the invention is unclear?

The Fitch Petition

John Fitch presented a petition before the House on the 13th May 1789, stating that he was the original inventor of the steam powered boat and that he had already received exclusive rights over his invention in many states. He claimed that he was the first to invent it and prayed that all others be excluded from using or improving upon his invention until his patent expired. He states: "the House will undoubtedly perceive that the Question of the Experiment, was, Whether or not Steam could be usefully applied to Navigation? and not, What Mode would best answer the purpose? because, in the latter Case, the person who should, by great Labor and Expense, fully prove the utility of the plan, by making the Experiment in any one mode, for he could not try more than one at

once, would secure to himself no Advantage in the Discovery, because a Dozen Persons, or more, might, by varying the mode of applying the power, demand at a future Day a participation of the Emoluments or Advantages of a Discovery, which he, through great Difficulties and Expense, had brought into valuable existence..." He prayed that he be secured by law in his rights "in such a manner, upon the true principles of priority of invention, as will preclude subsequent improvers upon his principle from participating therein until the expiration of the term of his exclusive grants." It is quite clear from the Fitch petition that he feared his competitors could be granted a patent before him. Probably, he stated that he was the first inventor, to emphasize this point. This in fact turned out to be the law in United States. To this day US is the only country to award patents to the person who invented first while the rest of the world follows the 'first to patent' policy. His competitors like Rumsey might have succeeded in proving that their improvement of the steam boat was substantial enough to merit a patent. Therefore, he specifically stated that any improvement on his invention should not be granted a patent or be allowed to use it on his patent until his patent expired. This turned out to be the US patent law. These petitions threw up a lot of issues before the House and influenced the future patent law of United States.

1. Constitution and patent clause and Jefferson

It is but surprising, to find that there is no record as to any opposition of significance in the constitutional deliberation on the subject of Intellectual property clause. There were quite a few states that didn't agree to the inclusion of the clause. Thomas Jefferson would have quite likely to have opposed it, but he was not part of the delegate to the Constitutional Convention. Strangely, enough the supreme court has time and again referred to Jefferson as the architect of the patent system while he had his reservations about it, which he expressed to a French citizen in 1787, "though the interposition of government, in matters of invention, has its use, yet it is in practice so inseparable from abuse, that they think it better not to meddle with it. . . ." But at the same time as we can see the Framers of the constitution were meddling with it.

The Constitution was drafted based on the lessons drawn from the operations and experiences of the states, but it cannot be said how much of a role colonial patent custom influenced the ultimate

outcome. Constitutions of states like Maryland and North Carolina had explicitly discouraged any sort of monopoly including the limited time monopoly granted to authors and inventors. According to the Maryland constitution of 1776, Article XXXIX, "monopolies are odious, contrary to the spirit of free government, and the principles of commerce; and ought not to be suffered.". Similarly, the North Carolina constitution of 1776, Article XXIII, stated "that perpetuities and monopolies are contrary to the genius of a free State, and ought not to be allowed."

It is uncertain what made the delegates to reverse the Article II of the Articles of Confederation which had precluded the Congress from issuing patents. Their must have been a strong reason which warranted that the Congress should have the power by way of the intellectual property clause and such power should be expressly set forth rather than being merely implied in any other clause like the commerce clause. Maybe the delegates thought that it was eternal duty of the government to promote the progress of useful arts and sciences and by including the clause on the intellectual property in the constitution it wanted to eliminate any such tendency to ignore the above duty. It is also quite unique that amongst all the clauses in the constitution, the intellectual property clause sets forth the mode of exercising that power (by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries). Why did the delegates think that it was important to specify the mode of accomplishing the objective? Too much reading into this clause has lead the court to interpret that the congress can promote science and useful arts only by giving exclusive rights for a limited time. But, the question arises as to how much time is limited time? This reading into the clause has prevented the congress from looking at other alternative ways of promoting science and useful arts.

That they should do so is interesting because there are numerous ways to promote the progress of science and the useful arts which have nothing whatever to do with the granting of exclusive rights for limited times in inventions or discoveries. Indeed, a strong movement would arise in Europe in the nineteenth century which would argue that this was precisely the wrong way to encourage industrial innovation. Why then should the Constitution make specific reference to promoting the progress of the useful arts by securing exclusive rights in their inventions to inventors for limited times? The answer in no small measure seems to have been

predicated on the fact that they desired to follow the English practice of granting exclusive rights through the issuance of patents or something similar and were not at all certain that the Congress would have the power to do so without an explicit grant of authority.

Jefferson's concern over monopoly

It is very well known that Jefferson was ambivalent about the working of the patent laws. But he was not alone in his concern. George Mason, a Virginian, refused to sign the constitution as he thought the intellectual property clause might promote monopoly in trade and commerce. The New York convention ratifying the Constitution recommended certain amendments like the power of congress to grant monopolies to companies which give them an advantage in the commerce. Likewise, the ratifying conventions of Massachusetts, New Hampshire, and North Carolina requested an amendment "that congress erects no company of merchants, with exclusive advantages of commerce." But Jefferson was the most prominent person who had expressed reservations over the granting of limited time exclusive property rights in ideas.

On receiving the draft of the Constitution from Madison, Jefferson wrote back to him expressing his concern that the constitution did not have a bill of rights. In setting forth his views on what the bill of rights should include, he indicated that it should provide "clearly and without the aid of sophism . . . for the restriction against monopolies." He did let Madison know about this discontent after the Constitution had been ratified: "It is a good canvas, on which some strokes only want retouching. What these are, I think are sufficiently manifested by the general voice from North to South, which calls for a bill of rights. It seems pretty generally understood that this should go to . . . Monopolies. . . . It is better . . . to abolish . . . Monopolies, in all cases, than not to do it in any. . . . The saying there shall be no monopolies lessen the incitements to ingenuity, which is spurred on by the hope of a monopoly for a limited time, as of 14 years; but the benefit even of limited monopolies is too doubtful to be opposed to that of their general suppression". He probably knew about the working of the patents in Britain and may have been aware of the problems and ill effects in Britain. Maybe, he was aware of the leading arguments against the grant of patents in England. In his response to Madison he did not distinguish between monopolies as good or bad unlike others he viewed monopoly'

limited or otherwise to be bad for the society. He argued that "the benefit even of limited monopolies is too doubtful to be opposed to that of their general suppression." But, Madison firmly disagreed. He argued that patents and copyrights were monopolies that should be tolerated because of the public good they could produce. This was in essence the common law justification for these limited term monopolies. After hearing Madison, Jefferson probably resigned to accept it. As the first Secretary of State, he was responsible for administering the patent laws. He took that responsibility seriously, he carefully examined each and every invention, ascertained that it was new and useful and on that basis of this, he would recommend for the grant of a patent.

But, even after administering the grant of patents, he seemed to be skeptical about it. Probably, this was the reason he never patented his inventions like his collapsible chair and the refined plough, he freely gave away all of his inventions to the public. In his view, nations without patent systems did as well as those with patent systems in the number and nature of their inventions.

1. Patent Act of 1790

The first US patent Act was passed in 1790, which operated only for three years and was replaced by the Patent Act of 1793. The act provided for the issuance of the patent to "any person who hath invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used. . . ." Although, the constitution does not make any specific reference to patents, the act refers to the part of the constitution "to promote the progress of useful arts".

It was one of the earliest patent acts which functioned on an examination system and thus departed from the English system of registration system. The patent would be granted only after the approval by at least two out of the three of the Board members. The Secretary of State, the Secretary for the Department of War, and the Attorney General constituted the Patent Board. The Board had a lot of discretion and had the power to formulate the general rules under the Act of 1790: "One of these was, that a machine of which we were possessed, might be applied by every man to any use of which it is susceptible, and that this right ought not to be taken from him and given to a monopolist, because the first perhaps had

occasion so to apply it. Thus a screw for crushing plaster might be employed for crushing corn-cobs. And a chain-pump for raising water might be used for raising wheat: this being merely a change of application. Another rule was that a change of material should not give title to a patent: As the making a ploughshare of cast rather than of wrought iron; a comb of iron instead of horn or of ivory, or the connecting buckets by a band of leather rather than of hemp or iron. A third was that a mere change of form should give no right to a patent, as a high-quartered shoe instead of a low one; a round hat instead of a three-square; or a square bucket instead of a round one. But for this rule, all the changes of fashion in dress would have been under the tax of patentees." Jefferson probably was concerned that a lot of frivolous patents would be granted for slight changes in application or a change in form to things already in use. He feared that this would rob the people of the general use of the existing art.

Jefferson also later expressed the opinion that a combination of known implements should not be patentable: "If we have a right to use three things separately, I see nothing in reason, or in the patent law, which forbids our using them all together. A man has a right to use a saw, an axe, a plane separately; may he not combine their uses on the same piece of wood?"

The Act made it mandatory to file in a specification which described the invention in detail. Jefferson ensured that the written description of the invention aided in understanding the invention and that it was accurate. In fact in the latter years the Patent Office itself had person to write the specification for the patentees, although he was not officially appointed. The Section 4 of the act is similar to the English practice. Thus, it requires: "that the grantee or grantees of each patent shall within one calendar month, next after the sealing and delivery to him or them of each patent, deliver to the a specification in writing, containing a perfect and exact description, accompanied with drafts and explanations (if the subject matter of such inventions and discoveries shall require the same in order to be understood) of the thing or things by him or them invented or discovered, and generally described as aforesaid in the said patents; which specifications shall be so particular as not only to distinguish the invention from other things before known, but also to enable a workman or other person skilled in the art, science or manufacture whereof it is a branch, or wherewith it may

be nearest connected, to make, construct, or use the same, to the end that the public may have full benefit thereof after the expiration of the patent term; which specification shall be filed in the office of the said and certified copies thereof shall be competent evidence in all courts, and before all jurisdictions, where any manner or thing touching or concerning such patent, right or privilege shall come in question." The language used in Act is remarkably consistent to the English Practice and is a perfect illustration that they had a good knowledge of the English practice and the recent developments in the English courts.

Thus, although the act shows traces of the English practice, it also departed by adopting an examination process. It is unclear how and why they adopted the examination process. Probably, they felt that they could avoid granting frivolous patents if they adopted this system rather than the registration system which was the English practice.

1. Patent Act of 1793 The act of 1790 had occupied most of the time of the Secretary of the State, with the increasing activities and also the increased number of the patents, Jefferson was burdened with his duty as the examiner of the patents. Moreover, there were certain complains from the patentees about the 1790 Act. Therefore, a new bill was drafted to look into these aspects which culminated as the Patent Act of 1793. Jefferson himself had proposed a lot of changes to the earlier act. But, not all of his proposed changes were accepted. In fact Fitch argued that Jefferson's proposal to register the patent in every district court was rightly called in question by Fitch. According to him this would be expensive and time consuming. Some of the changes proposed in the bill are worthy of comment. First, the Secretary of State would issue a patent on the payment of a set fee into the U.S. Treasury rather than payment of fees to the various individuals involved in the process. Second, the bill allowed the petitioner to petition for "an exclusive property" in the invention. This was definitely a move away from the popular notion of patents as privileges. It is not known as to what caused this change in view. But, this proved to be a significant change which became the cornerstone for the justification of the patent system. Third, the bill required that the board would only make the material of the specification, including any models, drawings and specimens, available to the public at the expiration of the patent term. Probably there were complains from

the inventors or fears that access to specification might allow other to easily imitate their invention. Fourth, the bill contained an express proviso that obtaining a federal patent depended on surrendering any state patent rights that the petitioner had obtained before the ratification of the Constitution. Fifth, the system of examination was dispensed with, and patents were issued on the registration. The novelty and utility of the patents could be determined by the courts. As the patent examinations were occupying more time of the members of the board, they could not spare much time for their higher duties, the judiciary was given the responsibility in case of a dispute over the newness of the invention. Now, it was upto the courts to decide the validity of the patent as the board was authorized to grant at the first instance without having to examine the novelty of the invention.

How long is long enough? In 1813, several years after he had left the post of the Secretary of the State, in replying to Eli Whitney's query he replied that "certainly an inventor ought to be allowed a right to the benefit of his invention for some time. It is equally certain it ought not to be perpetual; for to embarrass society with monopolies for every utensil existing, and in all the details of life would be more injurious to them than had the supposed inventors never existed; because the natural understanding of its members would have suggested the same things or others as good. How long the term should be is the difficult question. Our legislators have copied the English estimate of the term, perhaps without sufficiently considering how much longer, in a country so much more sparsely settled, it takes for an invention to become known, and used to an extent profitable to the inventor." Jefferson shows his discomfort towards monopoly and effects of monopoly if the rights were perpetual. It is clear that he wanted to balance the social interest and the interest of the inventor. The duration of the patent must try to balance out these two interests.

Natural rights in inventions

Jefferson is very well known for his views against exclusive rights in ideas but he also dismissed the natural rights in invention. He said that some inventors pretended that they have a natural and exclusive right to their inventions, not for themselves but also to their heirs who could inherit the rights after the life of the inventor. He questioned whether the origin of any kind of property is derived from nature; it would be extraordinary to admit a natural and even

an hereditary right to inventors. He argued that no individual has a natural right in a separate property in an acre of land, how could an inventor acquire such rights. He argued that "by a universal law, indeed, whatever, whether fixed or movable, belongs to all men equally and in common, is the property for the moment of him who occupies it, but when he relinquishes the occupation, the property goes with it. Stable ownership is the gift of social law, and is given late in the progress of society. It would be curious then, if an idea, the fugitive fermentation of an individual brain, could, of natural right, be claimed in exclusive and stable property. If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility, but this may or may not be done, according to the will and convenience of society, without claim or complaint from anybody. Jefferson was of the opinion that "(i)n some other countries it is sometimes done, in a great case, and by a special and personal act, but generally speaking, other nations have thought that these monopolies produce more embarrassment than advantage to society; and it may be observed that the nations which refuse monopolies of invention are as fruitful as England in new and useful devices." If ever, these aspects were considered by the courts whether patents are necessary, then Jefferson affords an answer wherein he believes that there are other ways of encouraging inventors and according to the needs and necessities of a nation, it may or may not be adopted. Probably, he was convinced that there

were other ways to promote innovation and hence might not have subscribed to the narrow interpretation of the intellectual property clause; it is not clear whether he thought that providing exclusive rights to the inventors was the only way of promoting useful arts. From his opinion above it can be safely said that he may not have viewed the Intellectual property clause in a narrow and restrictive sense unlike the courts of the present day.

Throughout his life, Jefferson doubted the merits and efficacy of the patent system. Significant documentation exists showing his early opposition to the creation of the limited term monopolies called patents, and the effort he expended to administer the first patent system. A point, which has gone largely unnoticed but is highly significant, is that two decades after he had ceased to have the primary responsibility for the operation of the nascent United States patent system Jefferson expressed much skepticism concerning both its usefulness and its effectiveness. He clearly did not believe that patents promoted the progress of the useful arts as set forth in the Constitution, at least to any significant degree. Indeed, to the end of his life, Jefferson privately believed that the patent system more often served to permit patentees to obstruct rather than to promote the progress of useful arts.

Judicial Construction Under the 1793 Patent Act, the registration system was to come into effect wherein they would grant a patent on the face of it without ascertaining the novelty and the utility of the invention. The courts were to ascertain this in case of an infringement or challenge to the patent. Thus, the development of the patent law, lay firmly in the judicial construction of the statutory standards. In the case of *Earle v. Sawyer*, the question whether patents should be granted to improvements, if so what sorts of improvements deserve patents? Earle had made an improvement over a Shingle Mill. A perpendicular saw was replaced by a circular saw which made the task of veneering and sawing picture frames much easier. Justice Story said it "was so obvious to mechanics, which one of ordinary skill, upon the suggestion being made to him, could scarcely fail to apply it in the mode which the plaintiff had applied his. It is not sufficient, that a thing is new and useful, to entitle the author of it to a patent. He must do more. He must find it out by mental labor and intellectual creation, it must be what would not occur to all persons skilled in the art, who wished to produce the same result. There must be some addition to the

common stock of knowledge, and not merely the first use of what was known before. The patent act gives a reward for the communication of that, which might be otherwise withholden. An invention is the finding out by some effort of the understanding. The mere putting of two things together, although never done before, is no invention.” Probably the seeds of non-obviousness requirement were sown through this judgment, although the judgment said there is no such requirement under the act to secure a patent.

Other concepts like substantial novelty where existing art is tested and compared with claimed invention. If the existing art performed substantially the same function in substantially the same way giving out substantially the same result, then the invention should not be regarded as new. This is the doctrine of equivalence which is true even to this day. Thus the cases decided in the early days still remain the standard for testing the novelty of the patents. The judicial construction of the statute was mainly due to the change from the examination to the registration system.

1. Fear that wasn't to be came to be The modern system of technical examination of the patents owes its origin to the Patent Act of 1836. The examination system was re-introduced the which is still in use today. The registration system had left a lot issues to be determined by the courts. This also resulted in a lot frivolous patents being issued which if remain unchallenged in the courts would work for the entire term. From, 1836 onwards, each application was scrutinized by technically trained examiners to ensure that the invention conformed to the law, and constituted an original advance in the state of the art. It is believed that this act legitimized or strengthened the view of property rights in a patent. “Before then,” said Lincoln while addressing the Springfield audience in 1860, “any man might instantly use what another had invented; so that the inventor had no special advantage from his own invention. The patent system changed this; secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the fuel of interest to the fire of genius, in the discovery and production of new and useful things.” Had, he lived to invention is the most appropriate way to reward the inventive spirit. Had Lincoln lived to witness the transformation in the twentieth century, he might have altered his views about the role of the patents in innovation. Jefferson's worst fears about the patent

monopolies, which may not have occurred during his life time turned out to be true. The change in the attitude of the judiciary towards the patent system led to the conceptual development of the patents and at the same time the broader outlook enabled the patentees to stretch beyond the boundaries of the patent law. The Industrial revolution, the emergence of the United States as a strong political force, the decline of the British industry and the emergence of the new form of individualist capital market meant strategic use of the patents to gain market advantage. The controllers of the capital decided the fate of the industry and the rate of technological progress. The giant corporations surfaced from nowhere to upstage the individual inventor. The capital deprived individual inventor could no longer dream of reaping dividends from his invention. The task of product development and distribution and sale of the newly developed product meant heavy capital investment and entailed huge risks which deterred him from going the full length without the safety net provided by the corporations. He either sold his inventions to the company or became a part of its workforce. Corporations devised ways and means to own patents from individual inventors and other companies owning relevant patents. All this, in the hope of controlling the industry and wiping out competitors. The market and industry, heavily insulated by patents had become an impenetrable fortress. They were now armed with the most potent weapon in their arsenal; infringement suits, broad claims, restrictive licenses, patent pools, auxiliary patents, employee agreements, non disclosure clauses, unholy alliances etc. The competitors were either wiped out or forced to align with their major competitors. The scenario had changed, the individual inventor had given way to the giant corporations which readjusted the patent policies in the twentieth century. A committee member of the National Economic Commission in the early 1930's noted that "the overwhelming proportion of significant inventions now came out of scientific laboratories". The patent system that was meant to protect the inventor is now protecting the monopolizer of inventors. The Iron Trade Review, in 1915 carried an article which said that the patents in the US are brought up in large numbers for the purpose of suppressing competition. Monopoly on a industry by means of patent control constituted a monopoly of monopolies, such monopolies strangles the sciences and the useful arts." Jefferson set very high standards in granting as a patent administrator which resulted in very few patents being granted during his tenure. He personally examined each and every patent

application but his good work was undone due to the changes in the patent act of 1793 as it adopted a registration system instead of the examination system followed under the previous Act. Thus, anyone who swore by the originality of his invention would be granted patents leading to a flurry of frivolous patents which resulted in reverting to the examination under the Patent Act of 1836. Although, the patent act was passed to promote useful arts and science, there is no express sanction against the suppression of inventions, which the corporations of the twentieth century achieved by various means.

The AT&T and GE counsel, Frederick Fish opined that as business units expand, patent owning corporations supplant investors in the exploitation of the patents. Inventor became an employee selling his genius to the corporation. In 1885, about 12% of the patents were being granted to the corporations but by 1950 about three fourth of the patents were owned by the corporations.

Alexanderson, one of the leading engineers in the GE company expressed anguish over the failure of the patent system to protect the lone inventor, he groused that the system protects the institutions which favour inventions. This is the true reflection of a frustrated inventor who was resigned to the fixed salary of the corporation unable to exploit his inventions on his own, complaining about the patent system failing in its objective of protecting the inventor, instead supporting the corporations to maintain their hold over the inventors. Edwin.J.Prindle, in his pioneering work "Patents as a factor in manufacturing business", elaborates on the strategic use of the patents to gain industrial advantage. He elucidates the ways and means of suing patent systems for the purpose of holding corporate monopoly. Patents could be used as the most effective means of controlling competition enabling to gain total command over the market, dictating the price independent of market competition and cost of production. He considers it as the only legal form of monopoly; he cited a court decision which views the patentee as the czar. He gives a restrictive interpretation of the intellectual property clause in the constitution, "cries of restraint of trade and the impairment of the freedom of the sales are unavailing because for the promotion of the useful arts, the constitution and the statute authorize this monopoly..." It clearly speaks volumes about the rigid interpretation of the original purpose of the inclusion of the intellectual property clause in the constitution. The view that

monopoly is the only way of rewarding the inventor is over emphasized by the judiciary in its decisions. It is arguable whether that was the original intent of the framers of the constitution. The reason for such clause in the constitution was to discourage varied policy adopted towards the patent laws in the various states, an explicit mention in the Constitution would bring about uniformity in the patent practice which would aid in the technological advancement of the primarily agrarian economy. The restrictive view only aided in promoting monopoly. Jefferson had doubts about the working of the limited period monopolies, but little did he know that in the years to come corporations would find ways and means to extend their monopoly even after the expiry of the original patents. Prindle states that "if a patent cannot be secured on a product, it should be secured on processes for making the product; if not feasible then the product should be tied up in some way with a patent on some other product, process or machine. He advised that corporations should bind the employee inventor through a contract to assign all the inventions during the course of the employment, thus encouraging the subversion of the original intent of patent system. The non disclosure agreements, restrictive trade practice clauses became a regularity form hereon. AT&T having anticipated the expiry of their patents, surrounded their business with all the auxiliary protection. They found themselves in a position wherein they could close the doors on their rivals through a spate of infringement suits. An AT&T lawyers explains the companies success: "It appears to me that the policy of bringing suit for infringement on apparatus patents is an excellent one because it keeps the concerns which attempt opposition in a nervous and excited conditions since they never know where the next attack may be made, and since it keeps them all the time changing their machines and causes them ultimately, in order that they may not be sued, to adopt inefficient forms of apparatus." AT&T aggressively pursued the policy of buying relevant patents from the inventors or companies which enabled them to monopolies the telephone and radio industry. They gained virtual control over the radio broadcasting by buying the "three vacuum" tube from De Forrest, thus controlling the industry. Through licensing agreements, mergers, take over, purchases etc, it had increased its patent pools from two original patents to 9,255 patents. Floyd.L.Vaughn, after an FCC investigation of the telephone industry viewed that "by amassing thousands of patents on inventions in the whole field of communication....American

Telephone dominates the telephone and also controls the exploitation of potentially competitive and emerging forms of communication. It thus excludes others from its field and avoids being excluded by them. Would be rivals may enter and remain only as licensees under restricted conditions. It pre-empts for itself new frontiers of technology for exploitation in the future and in the meantime, protects what is already developed. It keeps itself in a commanding position for the exchange of patent rights. In short, it employs patents to maintain its dominance in communication.”

GE followed a constant policy of funneling into its control all the patents held by its licensees and touching any phase of the incandescent lighting industry. GE has acquired important patents relevant to the lighting industry through purchase of companies, patents and their own research as well as through the numerous court battles helped secure GE the monopoly of the manufacturing, using and vending of the modern electric light. In *United States V General Electric Company*, 82 F supp, 753. opined that the strategies of the big Corporations was to prolong the monopoly over the patents vital to their industry by suppressing, delayed introduction of patents, assignments of employee patents, incomplete disclosures in the patent applications, auxiliary patents. The court opined that “General Electric’s apparently impregnable position was a formidable barrier to anyone who contemplated entering the lamp manufacturing field and this coupled with the knowledge that it controlled the manufacture of lamp bases, lamp manufacturing machinery, along with a tight block on the supply of glass, created a situation sufficient to deter entry. The link of unlawful monopoly is apparent from the fact that upon expiration of the lawful patent monopoly in 1933, there was no new entry into the field.”

Moreover, various companies who had industry relevant patents entered into agreements with their competitors wherein they exchanged mutually exclusive patents relevant their own industry. The deadlock in the radio industry lead to the above process, where by the end of 1920’s there was a patent pool in the radio industry. After the World war I , the British Marconi Company threatened to dominate the radio industry in US, this forced GE to setup Radio Corporation of America to which it transferred all its radio patents to RCA. Further, RCA bought the shares of the American Marconi corporation which was subsidiary of the British Marconi corporation.

This strong combine left the competitors with little hope of competing with each other as they owned vital patents of the components of the radio, thus forcing companies like Westinghouse, AT&T to join their patent in the RCA radio patent pools which also enabled them to obtain patents in electric light and telephone from its competitors. Thus, not only was there a radio patent pool but patent pools in telephone and light industries also.

The early half of the twentieth century clearly vindicates the fears that Jefferson had about monopoly as a reward for the promotion of the useful arts and sciences. The lone inventor was no longer a patentee, if so he had lost control over it. Corporations used the patent laws to position themselves to control the industry and the market.

The American patent system went through a great deal of transformation in the twentieth century but the tenets of the earlier patent acts still remain in practice. Unfortunately, with the advent of the global commerce and the increased power of the individual corporations, the patent law was modified and subverted to their convenience. The recent judgments, especially on the Intellectual property clause, are a restrictive reading of the original intentions of the framers of the Constitution. In the wake of the increase in the term of the copyright protection one is left to wonder like Jefferson about the term of the exclusive rights. Isn't it any irony to see that courts use Jefferson's views to further the cause of exclusive property rights in inventions while Jefferson was averse to any such thought?

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History of Patent Law

1. Early Patents

The earliest form of patents might have existed in the 500 BC in Sybaris, Greece where monopolies were granted to new dishes for a period of one year. Some even contend that the patents originated in the Roman Empire where guilds existed, but its uncertain whether the guilds in that era followed such a system as they existed primarily for social and religious purposes. The guilds in the Middle Ages developed in the context of the market economies that existed in the cities. Maybe the proprietary attitude developed to safeguard the craft knowledge which had attained widespread reputation outside the region, thus increasing the commercial value of the craft. The, the guild system followed a system of apprenticeship, which facilitated the process of imparting the techniques of the craft. Thus it can be regarded as communal property, rather than a monopoly held by an individual. The craft developed within the guild and was shared by all the craftsmen of the guild. For example, the Venetian glassmakers had reputation for glassmaking during the Renaissance time. Glassmaking was strictly restricted to guild members and was closely controlled by them. There were regulations as to working days, apprenticeship, technical specifications, quality of the glass, ingredients to be used. As the reputation of their craft increased the commercial value also increased, with it the realization that the craft must be strictly forbidden from being exported to other parts of Europe. Thus, the earliest forms of monopoly emerged in the form of a communal property, restricted to a region and the guild. Patents could have emerged out of the need to develop new industries within in the realm. The need for increased revenue, prevailing high taxes meant that the royalty could fill their coffers by allowing foreigners to practice new art within the realm. Protection of the trade, tax incentives may have served as inducements to lure the foreigners to introduce new industries. They were to be granted exclusive rights to practice their art for a certain period of time. Although, it is certain that the genesis of the patent system originated in Italy, there is some ambiguity as to whether it began in Venice or Florence as Filippo Brunelleschi of Florence had invented a new kind of boat in which heavy loads could be effectively hauled over the river. In 1421, the Gentlemen of the Works requested from the Lords of the Council of Florence an exclusive privilege for Filippo Brunelleschi to make and use his invention on the waters of Florence for three years. Quite a few patents had already been granted prior to 1474 when Venice came up with its first patent statute, traces of the modern patent law could be found in it: "We

have among us men of great genius, apt to invent and discover ingenious devices; and in view of the grandeur and virtue of our city, more such men come to us very day from divers parts. Now, if provision were made for the works and devices discovered by such persons, so that others who may see them could not build them and take the inventor's honor away, more men would then apply their genius, would discover, and would build devices of great utility and benefit to our commonwealth. Therefore:

“ Be it enacted that, by the authority of this Council, every person who shall build any new and ingenious device in this City, not previously made in our Commonwealth, shall give notice of it to the office of our General Welfare Board when it has been reduced to perfection so that it can be used and operated.

It being forbidden to every other person in any of our territories and towns to make any further device conforming with and similar to said one, without the consent and license of the author, for the term of ten years.

And if anybody builds it in violation hereof, the aforesaid author and inventor shall be entitled to have him summoned before any magistrate the said infringer shall be constrained to pay him [one] hundred ducats; and the device shall be destroyed at once.

It being, however, within the power and discretion of the Government, in its activities, to take and use any such device and instrument, with this condition however that no one but the author shall operate it.”

The system envisages concepts of novelty, registration of the new device, term of exclusive right, infringement of patents as well as compulsory license. In the next two centuries the system of patent monopolies had spread across Europe. England being prominent among them developed the system. There are records to suggest that letters patent existed in England prior to 15th century and the letters patent developed on its without any influence from the system that existed in Venice.

II. UK PATENT

The English patent custom prior to the Statute of Monopolies is less understood. It is vital to understand when and how the need for

patent monopolies arose. From its inception up until the 17th century it was regarded as a privilege and had no roots in the common law. The earliest form of patents issued in England would resemble the charters granted by the Kings permitting the conduct of business in the region. There were Royal charters, Letters Close and Letters patent. Letters close were used to instruct private individuals, whereas letters patent, the public. All the instructions and directives were recorded in rolls. Charter Rolls, Close Rolls and Patent Rolls were used to record the various types of state papers. Records suggest that Patent Rolls have been since 1202. Blackstone states that: “ The king's grants are also matters of public record. These grants, whether of lands, honors, liberties, franchises, are contained in charters, or letters patent, that is, open letters, literae patentes (so called, because they are not sealed up, but exposed to open view, with the great seal pendant at the bottom; and are usually directed or addressed by the king to all his subjects at large)”.

With the emergence of the guild system in England, group monopolies came into being. These guilds had obtained exclusive right to sell certain goods within a region. Outsiders could not trade in that region but the members of the could compete with each other. The state sanctioned monopolies seemed to be acceptable to people as it lead to quality products and regulated prices. These guilds were under the control of the municipality. The rules of practice, the price of the goods, wages and working conditions were decided by the guild. This was kind of a regional monopoly which did not apply to the whole of England. It limited the expansion of the guild to other parts of England as similar guild existed elsewhere. This was an impediment in terms of national growth specially with the expansion of manufacturing sector and increasing trade. Thus, the local phenomenon was nationalized and the group monopoly gave way to individual monopolies. To encourage manufacturing the crown used to grant certain privileges to certain native inventions and new imports. The privileges were short of a monopoly, offering protection and franchises to the inventor or introducer of a new art. But, in order to attract foreign artisans to practice their art and train the locals, the Crown resorted to grant privileges to the artisans which allowed him to practice his craft exclusive others for a limited period of time, all the while training the locals in this craft. Blackstone writes: “The crown's prerogative to issue letters patent was a central tool in bestowing privileges

upon individuals in the furtherance of royal policies. When the crown thus wished to buttress the realm's lagging industrial development at the end of the Middle Ages, the issuance of letters patent was central to enticing tradesmen and industrialists to come to England." Letters patent were granted by King Edward III in the fourteenth century, protecting the trade foreigners willing to practice their trade within his realm and train his subject. John Kempe of Flanders was issued a letters patent in 1331 to practice his trade in England. Henry Smyth was granted a letters patent in 1552 to make Normandy glass subject to condition that he instructs others to make such glass during the such period as a the letters patent subsists as well as sell at a reasonable rate. He had the exclusive right to produce the Normandy glass for a period of twenty years. The grant specified that no person other than the person licensed or authorized by Henry Smyth could produce glass.

It is interesting to note that the Crown refrained from granting privileges to practice pre-existing works and mere improvements as it would hurt the existing trade. Bircot was refused letters of patent for a method of melting lead ore. It was considered as an improvement over the existing practice. This remained as a law for several centuries. Thus it can be safely concluded that letters patent is granted only if a new trade unknown within the realm is introduced in the state or a new trade not in existence before its invention. But, it can be observe that during Queen Elizabeth's regime, letter patent were granted even over well established trade.

1. The era Queen Elizabeth

Queen Elizabeth in the early years of her reign issued letters patent to encourage foreigners to introduce new manufacturing product and technology in England. Her policies seem to attract the foreigners. But in the latter part of her rule she used the same system to grant patents even on well established trade. The abuse of letters patent provoked the Parliament to legislate against such monopolies. She managed to pacify them by assuring them that such letters patent will not be issued any further. The letters patents issued during this period seemed more like monopoly grants rather than privilege grants. Although monopoly was generally abhorred, it was not regarded as illegal if the good to the realm could be demonstrated. The crown slowly seems to shirk the responsibility of introducing the new trade by shifting it upon the

recipient of the letters patent. Prior to this, the crown was responsible for the administration of the earlier privilege patents as a result the new industry was subject to control of the crown. Thus, crown had power to not only grant but also decide the disputes arising from the acts of the recipient

Early in her reign she made an effort to stimulate domestic production of goods imported from abroad thinking that this would help increase the revenue as well as increase her power relative of other states. To attract the superior continental technology from Italy, Germany etc. she assured them full protection of their produce, the grant of a patent monopoly appeared to be the most effective way to lure the foreigners. But the grant of monopoly came with strings attached to it. The new industry was to be introduced within a stipulated time, depending upon the working of the new industry the patent would be continued. Failure to introduce the new industry would result in withdrawal of the grant. Probably, the modern day working of patents might have emerged from the practice in the Elizabethan era. Moreover, the grant obligated the recipient to train the native artisans to practice the art. This was clearly used to enable the local artisans to pick up the new art and employ it after the expiry of the term of the grant. The recipient of the grant was compelled to employ English artisans to achieve the above objective. A number of patents were granted to foreigners during this period. Jacobus Acontius, an Italian is said to be the first to have made petition to the Queen citing the reasons for a grant of monopoly to him which was granted a patent in 1565. Although, monopoly was considered as contrary to the public interest, there is no record to suggest that the people came out against it during the early years of her reign. The grant of a monopoly seemed to have worked perfectly for her. But reckless grants of monopoly over flourishing trades and the exploitation of such grants resulted in increased prices, which irked her subjects.

Some historians suggest that she wanted to reward her faithful servants but hard on cash, she resorted to use the existing system to grant monopolies to those faithful to her. These were granted by the Crown in the form of letters patent authenticated by the Great Seal and addressed to the people at large. Those who received such patents exploited it to the hilt by selling it at higher prices. The grant included salt, iron paper, cards, drinking glasses etc. This obviously prevented the traders from carrying on their trade and

also resulted in high prices of commodities. David Hume in his history of England says, "these monopolists were so exorbitant in their demands that in some places they raised the price of salt from sixteen pence a bushel to fourteen or fifteen shillings." It is recorded that she granted more than 52 patents during her regime. Once such grant to Darcy over playing card, set the momentum against odious monopolies which ultimately lead to the Statute of Monopolies of 1624 during the reign of James I. The case of Darcy, more popularly known as the Monopolies case stood as a landmark case for the coming centuries. b. Odious Monopolies

Queen Elizabeth's abuse of letters patent created a flutter, drawing the attention of the Parliamentarians for all the wrong reasons. The grant of monopoly over the making and selling of cards to Darcy added fuel to the existing discontent. She could no longer cover up her acts under the pretext of public good as it was evident that monopoly was being granted over existing trade. Affecting the livelihood of several traders dealing with the same goods. Elizabeth defended her royal prerogative in issuing letters patent as "the chiefest flower in her garden and principal and head pearl in her crown and diadem. The unabated use of her chiefest flower resulted in act of 1624 against such monopolies." It was perhaps inevitable that the issue would come to be raised in Parliament that the crown would just as inevitably take it as an attack on the royal prerogative. The queen's response was sharp, she claimed that certain "audacious, arrogant, and presumptuous" members of Parliament were out to trim her majesty's "chiefest Flower" and that her royal prerogative should not be called in question to determine its validity.

The case of Darcy v. Allin, popularly known as the Case of Monopolies is regarded as the first case wherein patents were viewed as a legal right of the inventor rather than the royal prerogative. It is interesting to note that the judges resorted to verbal jugglery to avoid commenting on the royal prerogative and instead propounded the right of the inventor.

The playing card monopoly granted to Edward Darcy in 1598 facilitating Darcy's complete monopolization over all manufacture, importation and sales of playing cards, added fuel to the fire. Darcy did not hesitate to enforce his privilege; he appealed to the Privy Council in 1600, for instance, to do something about violators of

his monopoly grant. The Council responded by declaring that all those in contempt of the royal prerogative shall be sent to the prison. There was no examination of the kind of monopoly power granted to Darcy, although many alleged that he had monopolized a well established trade. The Council avoided ordering anything against the royalty as they might have felt that the royal prerogative must not to be limited in any manner.

The monopoly on the importation, manufacture, or sale of playing cards had prevailed in one form or another since 1576. A patent had been originally granted to Bowes and Bedingfield in 1576, reissued in 1578, and in 1588 reissued to Bowes alone. Bowes died before the full term of the patent had expired, and in 1598 it was reissued to Darcy with a term of 12 years. There were widespread infringements which resulted in actions against the infringers. The Privy Council seemed determined to uphold the grant despite opposition to it. Firstly, a committee was set up by the Privy Council to aid, supervise and enforce the patent. There were numerous suits before the Council as well as counter suits for trespass of their property. Alen happened to be one such who joined the countersuit and he was threatened to be charged with infringement if he continued to prosecute his suit against Darcy.

The Argument in the case was much more complicated, Coke who was the Attorney General argued on behalf of Darcy. Allen argued if the monopoly would be deserving in case of anyone who would bring a new trade into the realm as it would aid in furtherance of trade that never existed in the realm, moreover he might use his wit in inventing it. In such instances a grant of a monopoly patents for a limited time would enable the others to learn the trade. Such monopoly would be appropriate as it does good to the commonwealth, otherwise not. Allen choice of words seemed like he took great care not to antagonize the royalty. Probably the statute of Monopolies was based on these lines. A look at the modern patent law also suggests that Allin's arguments involve the concepts of novelty, working of the patent, term of the patent as well as the argument that the patents are for the larger good of the society. Probably Allen intended to suggest that patent monopolies should not be granted over well established trade or art. He cited the essential conditions laid down in the first monopoly grant to Smyth and followed by Queen Elizabeth during the first half of her reign. He argued that the crown may grant a patent for a reasonable time to a man who "brings a new trade into the realm" by "his own

charge and industry" and through "his own wit or invention" "until the subjects may learn" how to practice the trade themselves. He argued that Darcy's patent "doth but take the trade of making and selling of cards from many persons, and giveth that trade to one, which is unlawful." Thus, he reiterated the law governing the issuance of letters patent for inventions. It is interesting that given the circumstances, he could argue against the monopoly grants and the courts didn't want to either. There was no discussion at any point in the case as to whether monopoly was in accordance with the common law.

Although Coke argued on behalf of Darcy he later reports that such grants of monopoly was against the freedom of trade and the common law. He condemned it as a dangerous innovation and being against the law. He regarded it as an odious monopoly. It is important to note that the result of case is not of much relevance but the opinions expressed on monopolies whether in the arguing for the case or expressed later (in case of Coke). Monopoly was stated to be prima facie against the common law, the statute law, and the liberty of the subject because it damages not only those working in the trade but all other subjects of the realm as well by raising prices, reducing merchantability, and reducing employment. These were strong words, but is not reflected in the outcome of the case as Darcy's monopoly grant was upheld.

In 1606, the Committee on Grievances of the Parliament petitioned for relief from the various patents of monopoly that had been issued. King James I promised to revoke some of the monopolies. Responding to the petition, James issued a declaration known as Book of Bounty which stated that monopolies were against the law of the land but the crown reserved the right to reward new inventions and the discretion to withdraw them in case of rise in prices due to such grant. It suggests that James made desperate attempts to retain the power to grant patents of monopoly. The Book of Bounty did little as he continued to grant patents of monopoly in the same fashion. The issue snowballed into a case questioning the powers of the King.

The Clothworkers of Ipswich Case in 1615 marked the beginning of the end of royal prerogatives as it ultimately led to the Statute being enacted against monopolies. In this case, a group of tailors incorporated and chartered by King James to sell their services in

Ipswich brought an action against an individual tailor who was not part of the corporation but nonetheless practiced his trade within the town. The case report reads: It was agreed by the Court, that the King might make corporations . . . but thereby they cannot make a monopoly for that is to take away free-trade, which is the birthright of every subject. . . . But if a man hath brought in a new invention and a new trade within the kingdom, in peril of his life, and consumption of his estate or stock, &c. or if a man hath made a new discovery of any thing, in such cases the King of his grace and favour, in recompense of his costs and travail, may grant by charter unto him, that he only shall use such a trade or trafique for a certain time, because at first the people of the kingdom are ignorant, and have not the knowledge or skill to use it: but when that patent is expired, the King cannot make a new grant thereof: for when the trade is become common, and others have been bound apprentices in the same trade, there is no reason that such should be forbidden to use it. Thus, it was held that the Crown might lawfully grant exclusive privileges in a new invention, a new discovery or a new trade within the realm, for a limited time.

The judgment lays down the doctrinal principles for issuing such patents. It clearly lays out justification for the monopoly: it enables the introduction of the new industry, training of the Englishmen in the trade, no monopoly patent can be issued for pre-existing industries and moreover it still considered the patents as royal privileges.

Even after the decision in the Ipswich case, grant of odious monopolies continued unabated forcing the Parliament to act upon it. In 1620–21, a review was conducted in the House of Commons concerning public grievances relating to patents of monopoly. During this period a bill against monopolies was passed in the Commons, but without success. Due to the agitation in Parliament, James declared void some eighteen patents and with regard to some seventeen others relating to manufacture and importation (monopoly patents of invention) provided "that if any subject should find himself grieved, injured, or wronged by reason of any of the said grants, he might take his remedy therefore by the common laws of the realm or other ordinary courts." Thus, ultimately the crown allowed the courts to adjudicate on the grants. But, this did not prevent the Parliament from passing legislation against monopolies in 1624.

1. Statute of Monopolies

The monopoly patent had been carried to an enormous extent, stretching beyond its objective during the reign of Queen Elizabeth; the Statute of Monopolies put an end to this unabated abuse. Queen Elizabeth had taken it to new heights and she used her popularity to diffuse any Parliamentary intervention. James I, who succeeded her, continued to grant such odious monopolies, but was unsuccessful in diffusing the situation when it went out of control, thus paving the way for the new legislation.

The Statute of Monopolies enacted in 1623 became the basis of the patent practice in England for nearly two centuries. It succeeded in reiterating the common law principles in the statutory form. It rendered void all grants of monopolies and dispensations with one exception. The exception was the grant of 'letters patent for the term of 14 years' . . . of the sole working or making of any manner of new manufactures within this realm to the true and first inventor and inventors of such manufactures which others at the time of making such letters patent and grants shall not use, so as also they be not contrary to the law or mischievous to the State by raising prices of commodities at home or hurt of trade or generally inconvenient'. Monopolies and letters patent void The first section declared as contrary to the law of the realm and utterly void, all monopolies, grants, licenses, and letters patent theretofore made or granted, or thereafter to be made or granted, to any person or persons, bodies politic or corporate, of or for the sole buying, selling, making, working, or using of anything within the realm. Validity to be determined by common law Section 2 provides that the force and validity of all monopolies, and all commissions, grants, licenses, charters, letters patent, proclamations, etc. tending toward monopoly, shall be determined in accordance with common law. Not to exercise or use the grant... Section 3 provides that no person, body politic, or corporation may use or exercise any monopoly right granted by any commission grant, license, charter, letters patent, proclamation, etc. Damages and cost Section 4 grants any party aggrieved by a monopoly the right to recover treble damages and double costs in the common law courts. Sections 5 to 14 set forth a variety of exceptions to section 1.

Existing patents are exempted

Section 5 exempted existing patents for inventions from the statute's prohibition on monopolies provided they met the same requirements set forth above and did not extend beyond twenty one years.

Duration of the letters patent

Section 6 enumerates that any declaration before mentioned shall not extend to any Letters Patents and Grants of Privilege for the term of fourteen years or under, hereafter to be made, of the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures, which others at the time of making such Letters Patents and Grants shall not use, so as also they be not contrary to the law, nor mischievous to the state...the said fourteen years to be accounted from the date of the first Letters Patents, or Grant of such Privilege hereafter to be made, but that the same shall be of such force as they should be, if this Act had never been made, and of none other.

As Lord Coke was one of the participants in the development of the law, he gives an elaborate exposition on Section 6. According to him for a patent to qualify under the exemption provided under Section 6 it must have seven properties:

(1) The term of the patent may not exceed fourteen years The term of fourteen years made sense as that would allow at least two apprentices to have been trained in the new industry. As the duration of apprenticeship lasted for seven years, fourteen years would enable to generation of artisans to be trained in the new art.

(2) The patent "must be granted to the first and true inventor Only the person who has played a part in introducing the invention within the realm must be rewarded. He does not elaborate whether the invention be made in England or abroad. Although, this suggests that the first to invent should be granted the patent, the English patent system of the present day grants patent to the person who was first to approach the patent office. But, the American patent law is based on the first to invent concept.

(3) It must be of such manufactures, which any other at the making of such Letters Patents did not use This justifies the making of the Statute as the traders were petrified of grants of monopoly over

uses already in existence. The grant of such monopolies had not only hurt their trade but also resulted in the increase of price. This property is very close to the concept of novelty and prior art. In the context of the Statute the prior art may have been restricted to what was known in England at the time of the grant.

(4) It must not be contrary to law It is not clear what Coke meant by contrary to law. Did he mean contrary to the patent law or the privilege granted by the Crown. His views in the Bircot's Case decided in Exchequer Chamber in 1572 lead to an entirely different understanding. According to this, "not contrary to law" in Coke's view, meant merely that no patent may be granted for an improvement in an existing manufacture. This happened to be the view held in England well into the eighteenth century.

(5) It must not be mischievous to the State by raising of prices of commodities at home Coke was of the view that the introduction of the new industry should not be inconvenient to the consumer, like the rising of the prices of the commodities. He said patent must be granted only if it was necessary and of some utility.

(6) It must not "hurt trade and (7) must not be generally inconvenient.

His sixth and seventh property reiterates conditions for the grant of letters patent in the early part of the Elizabethan regime. The grant of any patent must not put people out of work nor should it in general cause inconvenience to the traders.

It is noticeable that neither the Statute nor the interpretation of Coke refer to the grant of letters patent as a privilege. It does not refer the letters patent as a right in the property. There was no obligation on the Crown to grant letters patent to the inventor as a matter of right. It remained the discretion of the crown for nearly two centuries. Although some suggest that with the Statute of monopolies the privilege became a right, there is no concrete evidence in this regard. It was only in the eighteenth century that the common law would come to recognize it as a special form of property known as a chose in action.

It can be said that the Statute became the foundation for the future development of patent law in England and elsewhere. It started, the

transition of the English patent custom into a patent system based on a legal framework.

1. Specification and novelty

Although a specification as understood in the modern sense was not required, basic requirements about the description of the new industry may have been necessary to obtain a letters patent.

Although, it is uncertain when the specification arose, there are records that suggest that the first specification arose some time around 1611. Sturtevant along with his petition filed a manuscript which described the working of the new industry. It is not clear as to whether a detailed working of the new industry was given in that manuscript, nevertheless it can be said that the earliest specification was made out of the inventors own volition. But the early specifications can be said to be nowhere as detailed as in the present times. It was only later in the eighteenth century that some officers began to demand a specification for the patent, which became a practice and a formal requirement to obtain a letters patent.

For the first 150 years of the English patent custom there was no requirement for a specification under the common law. It developed gradually over a period of 200 years. It initially started by way of individual inventor's own volition, but with the increase in the number of patents and the need to ensure that only new invention or industry is granted a letters patent, the common law officers thought it was appropriate to demand a written description of the invention, thus leading to a common law development of the above concept. There could also be reasons for granting patents without specification; if the royal policy was to introduce new industries that was practiced abroad or to re establish forgotten art, then granting patent was to see that other men learn the art over a period of time. So there was no need for specification.

Sturtevant, applied for a patent in 1611 along with a Manuscript describing the entire process. The objective behind filing a specification may have been to show that it was his own work, the other traders may know about his invention and that others may not file for a patent on the same invention. Probably some of these reasoning were used to justify the need for a specification.

Five decades later the dispute over Grill's application for a patent led to the future development of the requirement of a specification for a valid patent grant. Garill applied for a patent in 1663 for the sole casting of gold and silver Ingots for Lace, after his new invention. But the Goldsmiths and the wiredrawers of London his petition for the patent as it was already being practiced. Any grant of letters patent would hurt the trade and therefore it was in contravention of the Section 6 of the Statute of Monopolies. The king ordered the Privy Council to obtain a disclosure of Garill's new invention. The disclosure would enable them to ascertain whether the claimed invention was new method or already in practice. But, Graill refused to give a written disclosure of his invention. He either feared that others would learn about his new invention or probably it was already in practice. He was never granted a patent. Garill's case was the first such instance where the recipient of a letters patent was asked to disclose his invention in order to enjoy the patent privilege. Some authors have gone as far as regarding the specification as a social contract but I would be cautious in using such terms. I would rather say that with the development of the Statute of Monopolies which clearly envisages letters patent to be granted only for new inventions, there was a need to ensure that the above objective was achieved and specification became necessary in the light of this context. Written disclosure of the invention would not only enable the common law officers to understand the new process but also serve as record in the future.

But after Garill refused to disclose his invention, the common law officers did not insist on the need for a specification, for nearly five decades, there is no record of any such demand. In 1711, Queen Anne granted a patent to John Nasmith, in which his patent grant states: "Whereas John Nasmith of Hamelton in North Britain, apothecary, has by his petition represented to us that he has at great expense found out a new Invention for preparing and fermenting wash from sugar "Molosses" and all sorts of grain to be distilled which will greatly increase our revenues when put in practice which he alleges he is ready to do "but that he thinks it not safe to mention in what the New Invention consists until he shall have obtained our Letters Patents for the same. But has proposed to ascertain the same in writing under his hand and seal to be In rolled in our High Court of Chancery within a reasonable time after the passing of these our Letters Patents." Nasmith assured that he would file in the description of his invention after the grant of the

patent, he feared that if he did so prior to the grant, others might steal his invention. Nasmith like Sturtevant sought to file a specification in order to ensure that it was his invention, that it was a new invention, and that he would have the proper protection for his work.

After Nasmith, filing specification became a normal practice, although not mandatory, it was generally filed as they believed that their invention was more secure and that they could avoid their invention being called in for question. It became a common law practice only after 1752. Moreover, unlike the present day practice specifications were filed after the grant of the patent.

Liardet v. Johnson

The case of Liardet –Vs– Johnson, is a landmark case in the patent history as it led to the development of concepts like specification being regarded not just as a supplement to the petition for the grant of a patent but it came to be regarded as a consideration for the grant of a patent. The earlier view that working of the patent was a consideration for the grant of the patent was replaced by the specification. With it, the concepts such as prior art might have evolved. In this case, Liardet filed suit against Johnson, alleging infringement of Liardet's patent for a certain composition of cement. Johnson defended himself by attacking both the validity of the specification and the novelty of the invention itself.

Liardet applied for a patent on the composition of a type of cement on the 3rd of April 1773. He received a patent and within four months of the grant he filed his specification. Liardet assigned his patent to Adams family, as he wanted to apply for an extension of term, the patent was reassigned to him. The parliament extended the patent for another 18 years provided that he filed a specification as to the improvement on cement. The patent was not reassigned to Adams but with the acquiescence of Liardet the Adams family continued to use it. In May 1777 Liardet and Adams filed to suit praying for an injunction and the accounts of the John Johnson as he infringed upon the patent by making, imitating and counterfeiting cement specified in their patent. Johnson questioned the novelty of Liardet's invention and claimed that it was already in use prior to the grant of the patent. To establish this he showed two earlier publications which point to the same composition

mentioned in Liardet's specification. He also contended that there was no significant improvement for the term of the patent to be extended. Probably, by showing prior publication he meant to establish that it was already in practice. This may be regarded as first instance where a written publication was used to prove prior use or knowledge of the patent granted. It is interesting to note that there were two trials in the case and the verdict was in favor of Liardet in both the cases. There is no official report of the trials and its unclear why two trials were required.

In the context of the evolution of the patent law, the most important aspect of *Liardet v. Johnson* was Justice Mansfield's instruction to the jury at the second trial. After instructing the jury that they should avoid two false extremes in their deliberations-- "to deprive the inventor of the benefit of his invention for the sake of the public" and to permit "monopolies of what is in use and in the trade, at the time they apply for the letters patent"--Mansfield instructed the jury that a plaintiff-patentee must meet three conditions in order to prevail. There are three grounds that must be made out to your satisfaction: 1. whether "the defendant did use that which the plaintiff claims to be his invention"; 2. "whether the invention was new or old"; and 3. "whether the specification is such as instructs others to make it" "within the sense of the Act, the condition of giving encouragement is this: that you must specify upon record your invention in such a way as shall teach an artist, when your term is out, to make it--and to make it as well by your directions: for then at the end of the term, the public shall have benefit of it. The inventor has the benefit during the term, and the public have the benefit after. But if the specification of the composition gives no proportions, there is an end of his patent ...I have determined, in several cases here, the specification must state, where there is a composition, the proportions; so that any other artist may be able to make it, and it must be a lesson and direction to him by which to make it. If the invention be of another sort, to be done by mechanism, they must describe it in a way that an artist must be able to do it."

This is one of the earliest instances where specification was regarded as an instrument that enables those skilled in the art to make and use the invention. I regard this as an extension of the earlier requirement that the inventor train the people of the land in the said invention. Probably this is one of the reasons historians

regard specifications a consideration for the grant of the patent. But, I do not subscribe to the view expressed by some that it replaced the earlier consideration of working the patents within the realm. Even to this day working of the patent is an inherent principle of the patent law. It is also notable that Mansfield's instruction was more of a judicial construct as he does not cite any authority for any of the three points. As a result of this case specification not only became part of the patent law but it was important to file an appropriate specification which accurately discloses the invention.

Caveats

Caveats were being allowed to be filed before the sealing of the patents and it lasted for a period of three months. Caveat books were regularly maintained and checked whenever a new petition for the grant of patent was presented. Caveats aided in grant of a patent as it enabled any person who opposed the patent could establish that it was already in existence. If a caveat was filed before the sealing of the patent, a hearing would be held with the petitioner and the opposer. The person opposing would be allowed to state his understanding of the existing art and the petitioner would be allowed to elaborate on the nature of his invention. A decision would be arrived at whether to continue with the petition or reject it. The caveat system allowed the guilds, which were basically against the grant of letters patent, to oppose potential patents. The traces of the caveat can be found in the modern patent law which invites any opposition to the grant of patent.

Procedures to grant a patent

The grant of patents in from its inception was mired in numerous procedures. It is probably for this reason Dickens wrote a story on an inventor going through the procedure to obtain a patent.

The procedure entailed the following: (1) the would-be patentee prepared a petition to the crown together with an affidavit which had to be sworn before a Master of Chancery; (2) the petition and affidavit were taken to the office of one of the Secretaries of State (later always the Home Office) where it was endorsed and referred to the law officers; (3) the endorsed petition was taken to the law officer's chambers and left for a report to be made concerning it; (4) if the law officer report was favorable, the petition and report were

returned to the Secretary of State's office where a warrant was prepared, signed by the Sovereign and countersigned by the Secretary of State, directing the law officer to prepare a bill for grant of a patent; (5) the signed warrant was taken to the law officers where a bill was prepared on parchment incorporating and prescribing the exact wording to be used in the final letters patent; (6) the patent bill was then taken back to the Secretary of State's office where it was signed by the sovereign and countersigned by the Secretary of State, thereby being transformed into the king's or queen's bill; (7) the king's bill was taken to the Signet Office where a signet bill was prepared on parchment and sealed with the signet which authorized the Lord Privy Seal to prepare a Writ of Privy Seal to the Lord Chancellor; (8) the signet bill in turn was taken to the Office of the Lord Privy Seal where the Writ of Privy Seal was prepared on parchment and sealed with the privy seal; (9) the Privy Seal Writ was taken to the Office of the Lord Chancellor where letters patent were engrossed on parchment in the exact wording of the Writ, dated, and sealed with the great seal; and (10) the patent was enrolled from the Writ of Privy Seal on the Patent Rolls for the particular regal year. An additional requirement of preparing a specification became necessary in the latter part of the eighteenth century. e. Privilege to property right

It was uncommon to hear property rights over idea, at least a few centuries ago. It was inconceivable to think about property rights in ideas. As man stands on the shoulders of civilizations several millenniums old, suddenly he seems to have attributed property rights over ideas. It is easy to look at each idea in isolation, to claim rights over it, but we fail to realize that we have relied on a chain or a sequence of ideas to develop them. The history of the development of patent law suggests that at the time of its inception to up until the nineteenth century, it was regarded as a privilege granted to the inventor for introducing the new industry. It was only in the latter part of the eighteenth century that inventors began to think about it in terms of property rights. They tried to support this line of thought by basing it on natural rights theory propounded by John Locke. Sadly, in the present times, property rights in patents are justified on this basis, but hardly does any one care to look at it in the context in which patents were issued in the early days.

The sixteenth century English view was that property rights were given "by the law of man, not by the law of God or reason" and

therefore the state could determine the limitations under which property could be acquired. There was no inherent right to property. It is thus not surprising that there was no common law in favor of either patents or copyrights before or under the reign of Queen Elizabeth. Patents were issued under the royal prerogative as a grant of a special privilege conferred by the crown upon the patentee which did not belong to the citizen as of common right. At no point of time in the sixteenth and seventeenth centuries, it was regarded as a property. Even after the Statute of Monopolies repealed the royal monopolies, it was still regarded as a favour done by the Crown. There was no judicial view or opinion in favour of natural rights of the inventor, although judges at that time were said to be largely influenced by the natural rights theory. In 1769, Justice Yates appeared to deny at least a Lockean conception of a natural right of inventors by arguing "that the mere labour and study of the inventor, how intense and ingenious so ever it may be, will establish no property in the invention, will establish no right to exclude others from making the same instrument, when once the inventor shall have published it."

France was probably, one of the first countries to adopt the natural property rights in ideas. The preamble to the French Constitutional Assembly states that every novel idea whose realization or development can become useful to society belongs primarily to him who conceived it, and that it would be a violation of the rights of man in their very essence if an industrial invention were not regarded as the property of its creator." It is not known, how or why they came to believe property rights in idea.

German Economist Prince Smith in his report to a committee on patents rejected the concept of intellectual property as an untenable political fabrication. A middle position on the question of natural property rights was taken by Max Wirth. He defended the concept but he said that "inventions do not belong in the category of intellectual property, because inventions are emanations of the current state of civilization and, thus, common property. What the artist or poet creates is always something quite individual and cannot simultaneously be created by anyone else in exact likeness, in the case of inventions, however, this is easily possible, and experience has taught us that one and the same invention can be made at the same time by two different persons: —inventions are merely blossoms on the tree of civilization."

There was widespread rejection of natural rights of property in the invention, even in the hey days of the eighteenth century, but with advent of the industrial revolution and the spurt in the number of patents, inventors, patent lawyers and some academicians pushed this philosophy which appealed to the changing economy. f. James Watt and Co, the glorious years

Very often, large corporations, owners of numerous patents tend to hinder the technological progress as they control the entire industry. We don't have to go too far to demonstrate this, Microsoft's absolute control over the computer operating systems means that other software companies have to seek a license from Microsoft so that their product can run on top of the Microsoft platform. There are ample examples like GE's control over the electric lights, Bell Co.'s complete monopoly over the telephone industry etc. Similar control and monopoly could also be seen in latter part of the eighteenth century and nineteenth century. The rise of capitalism and the growth of corporations meant individual inventors had to sell or assign their patents to the corporations to earn money. The lure of the money and the prospects of a stable future attracted many inventors to work in these corporations. The growing patent pools enabled the corporations to dictate the industry. The real objective of the letters patent was lost some where in the transition. The turn of the nineteenth century witnessed a spurt in technological growth but at the same time due to the transition and the emergence of companies hindered subsequent innovations and improvements of intellectual works. A famous example of this occurred when James Watt, holder of an early steam engine patent, denied licenses to improve it to Jonathan Hornblower and Richard Trevithick, who had to wait for Watt's patent to expire in 1800 before they could develop their high pressure engine. Newcome had invented the steam engine which was largely used in the mining industry, but it was best with certain technical problems, Watt hit upon an idea to expand and condense steam in separate containers, which was ultimately patented. There were several who were working towards the concept but the grant of the patent to Watt meant they could no longer employ their idea for commercial purposes. Further, although, Watt's patent had expired, the parliament extended the term for another twenty years even though there was no substantial improvement in his steam engine. This benefited his company Boulton and Watt Co., in

extending its monopoly over supplying steam engine. At one time the demand was so much in excess of the supply that the company did not have enough skilled workers to meet the demand, they turned away some orders. The use of the steam engine increased after the expiry of the Watt's patent. But it has to be mentioned that inventions by William Bull, Richard Trevithick and Arthur Wolf had wait for the Watt's patent to expire, although they were developed earlier as they feared the same fate as Jonathan Hornblower. He had devised a superior and independently designed engine and had already started its production. Fearing a threat to their business Bolton and Watt went after him, using the patent system to their advantage they were able to stem the competition. Hornblower not only lost a costly legal battle but also landed up in the jail. Watt used the patent system effectively to ward off any competitor but this stifled innovation in the industry as Hornblower's case set a bad precedent for other inventors to commercialize it. Even Watt's invention was not perfect, James Pickard had solved the problem with his crank and flywheel combination, but Pickard couldn't adopt this because Watt held one of the crucial patents and vice versa. The cross patents prevented each other to put their patents into good use and they had to wait for each others patent to expire to incorporate their innovations. In fact, after his path breaking innovation, Watt spent more time in legal action in an effort to maintain his foothold over the industry. Watt remained ahead of the others not by superior innovations but by better exploitation of the patent system. By extending the term of his patent and preventing others from producing cheaper engines, he not only delayed the mass adoption of the steam engine but also hampered capital accumulation and economic growth.

James Watt was a great supporter of patents, said that "an engineer's life without patent was not worthwhile,". In a letter written in 1785 he expressed his thoughts on the motivations of inventors and the relationship of patents to those motivations. It is not too difficult to understand his position on the patents, it was an era where inventors struggled to make success out of their inventions. He felt patents probably bailed them out of this situation by enabling them to sell their trade to the manufacturers without fear of others copying his invention. He said that, if our right to our patent should be taken away, or rendered illusive, we must drop any further pursuits of that scheme and apply ourselves to other businesses where our property can be more effectually

guarded. According to him patents are a social good but by denying other inventors a license to work on his invention, he effectively prevented the technological improvement in the steam engine. There are ample examples of monopolies and oligopolies in the 19th century Britain. Some inventors even bought patents of others leading to a control over the industry, James Fisher, supplemented his own patents for lace machinery with the purchase of others until the trade united against his prosecution of infringements in 1847. In 1851 five of the largest Lancashire cotton spinners combined to purchase Heilmann's combing patent for cotton, and commissioned John Hetherington & Sons of Manchester to produce it for them. They licensed Hetherington to build machines for others and collected three fifths of the £500 purchase price as royalties. Around the same time, Chances of Birmingham and Pilkington's of St Helens persuaded James Hartley to license them under his lucrative patent of 1847 for rolled plate glass. Two syndicates of six and four manufacturers respectively, headed by the firm of Tomkinson & Adam, similarly monopolized the production of Axminster carpets through patents for power looms in the 1880s. Thus, history is replete with such monopolies which may have prevented other technological advances in their industry and, the notion of the property rights in inventions during the industrial revolution might have added more muscle to it. Interestingly enough, it is not too difficult to see why there was a controversy over patents during this time. g. The Victorian Britain and the patent controversy

The cost of securing a patent might have deterred inventors from going for one. Even at the peak of the industrial revolution, the costs were too high for any one to secure patents all over the kingdom. It would cost approximately £100 for England and Wales, £350 to include Scotland and Ireland as until 1852 separate patents had to be obtained for England, Scotland and Ireland. The total cost was enormous apart from the time taken to secure a patent. One had to go through a labyrinth of government to get it approved. The high cost of patent registration, the monopoly of certain important inventions triggered off a controversy regarding the abolition of the patent system. Even at the height of the industrial revolution many inventions of undoubted technological importance were never patented. The hand-mule's progress from Samuel Crompton's garrat to the early spinning factories went largely unpatented. It is difficult to attribute any single major factor to this

as it could be the high cost or the personal ideologies of the inventors or the values and the working environment might have prevented them from seeking patent. Some authors have directly or indirectly attributed that the technological growth during the industrial revolution might have been due to patent system as it encouraged inventors by rewarding them by protecting their invention from being imitated by others. Then why is it that the textile manufacturing which was the show case of British achievement came in for attack? It suffered due to lack of invention in this field. In 1872 a local news paper was writing of obsolete machinery and conservative ideas. Innovation in the coal mining had considerably slowed down in the first decade of the 1900's. Wasn't their enough incentives to invent?

For two hundred years the statute of the monopolies had not been amended, for several reasons like high costs, clumsy procedures and uncertainty in the applications of the patent law which ultimately lead to the review of patent law in England. Various groups were formed to obtain law more favourable to inventors, and considerable agitation was carried to Parliament and in the press. This provoked a counter attack from those who wished to see the patent system abolished entirely. In the latter camp were the influential London Economist, the Vice president of the Board of trade, some outstanding inventors of the time, members of the parliament and the representatives of manufacturing districts such as Manchester and Liverpool. This lead to a controversy (1853–1883) during the Victorian reign over the efficacy of the patent system. At this high tide of free trade, proponents of patent abolition questioned whether patents for invention should be exempted from the general proscription of monopolies, contending that patents provided an unnecessary incentive to invention, while obstructing innovative industrialists in the conduct of their business.

The advocates of patent system argued that patents were necessary as they believed that every man has a right to own his idea and that society was morally obligated to protect this property right. They believed that patents were an effective way of protecting the property in ideas. Others supported it saying that it was the appropriate reward for the service rendered by the inventors to the society. Industrial progress was necessary and the inventions lead to such progress. But, without any security for the inventions,

people would not be motivated to invent or disclose the invention to the society. Hence, to achieve the objective of industrial progress, society should grant patents to induce the inventors to disclose the invention to the society. There were many economists, lawyers, philosophers, politicians and traders who were against the patent system and they argued for the abolition of the patent system. About the same time, even the continental Europe went through the same turmoil. Holland had even abolished their patent law (1850's to 1890). A country like Switzerland didn't even have a patent law until the first decade of the twentieth century. Probably in the history of the development of patent law, this was one of the significant period wherein there was substantial opposition to the patent system, that too when the industrial revolution saw a spurt in innovations. Prince Smith a German economist argued that "inventions do not belong in the category of intellectual property, because inventions are emanations of the current state of civilization and, thus, common property. What the artist or poet & creates is always something quite individual and cannot simultaneously be created by anyone else in exact likeness, in the case of inventions, however, this is easily possible, and experience has taught us that one and the same invention can be made at the same time by two different persons: inventions are merely blossoms on the tree of civilization." Böhmert, an economics professor at Zurich, claimed that patents were now being more and more recognized to be "rotten fruits on the tree of civilization" and "ripe to fall." According to Simonde "the result of the privilege granted to an inventor is to give him a monopoly position in the market place against the other producers in the country. As a consequence the consumers benefit very little from the invention, the inventors gains much, the other producers lose and their workers fall into misery. He wanted all inventions to be immediately made known and immediately subjected to imitation by all the competitors of the inventors." R. A. Macfie of England, a severe critic of the theory of natural property rights in inventions, declared that "if there were any "natural rights" in connection with inventions it would be the inventor's "right to use his own invention. But just this right, he argued, was frequently denied under the patent system: all too often an inventor would find himself barred from using his own idea because somebody else had obtained a patent on it; this might happen even if his idea were better than the patented one but was considered a version of it." As early as 1850 an editorial in the London Economist presented similar views as follows: "Before the

inventors can establish a right of property in their inventions, they ought to give up all the knowledge and assistance derived from the knowledge and inventions of others. That is impossible, and the impossibility shows that their minds and their inventions are, in fact, parts of the great mental whole of society, and that they have no right of property in their inventions. Patents were “injurious to the progress of production and to the common welfare and, thus, illegitimate in the light of the principle of property rights.”

Rogers says that those who started using the word property in connection with inventions had a purpose in mind; they wanted to substitute a word with a respectable connotation, “property. For a word that had an unpleasant ring, ‘privilege’ in the nineteenth century ” According to Rentzsch. De Bouffler, people deliberately “construed the artificial theory of the property rights of the inventor” as a part of the rights of man. Instead of using terms like monopoly or privilege, if natural right is substituted in their place, it would receive immediate respect from the people as it was popular and well taken by the people.

Such arguments had an impact on the select committees of parliament and royal commissions which investigated the operation of the patent system in 1851–1852 in 1861–1865 and again in 1869 –1872. Some of the testimony before these commissions was so damaging to the repute of the patent system that leading statesmen in the two houses of the parliament proposed the complete abolition of patent protection. Lord Stanley, the chairman of the royal commission that inquired into the patent system in 1863–1865. On the basis of his inquiries he objected to the “principle of patents,” as it was (i) almost impossible that the reward go to him who deserved it, (2) impossible that the rewards be in proportion to the services rendered, and (3) impossible to prevent great injury being inflicted upon others. The British patent commissions pointed out that there was a heavy social cost of the operation of the patent laws. Others argued that patents had a negative social impact as it caused diversions in the areas of research. People who might be interested in one area of work might be induced to work in areas where the possibility of acquiring patents and profits are high, this they viewed diverted skills to other area, thus resulting in lack of innovation or progress in other areas.

A patent reform bill drafted on the basis of the 1872 commission's report provided for a reduction of patent protection to seven years, strictest examination of the patent applications, forfeit of patents not worked after two years and compulsory licensing of all patents. The bill was passed by the House of Lords. However, it was withdrawn later. Eventually the patent advocates managed to win because of the crisis in 1873 which led to severe depression. For the rest of the 19th century and the whole of the 20th century, patent system has been developed and nourished by the big business conglomerates. They have gone to the extent of arguing that patents are necessary tool in the era of free trade.

. The privileges granted to inventors by patent laws are prohibitions on other men, and the history of inventions accordingly teems with accounts of trifling improvements patented. that have put a stop, for a long period, to other similar and much greater improvements. it teems also with accounts of improvements carried into effect the instant some patents had expired. The privileges have stifled more inventions than they have promoted, and have caused more brilliant schemes to be put aside than the want of them could ever have induced men to conceal. Every patent is a prohibition against improvements in particular direction, except by the patentee, for a certain number of years; and, however, beneficial that may be to him who receives the privilege, the community cannot be benefited by it On all inventors it is especially a prohibition to exercise their faculties and in proportion as they are more numerous than one, it is an impediment to the general advancement, with which it is the duty of the Legislature not to interfere, and which the claimers of privileges pretend at least to have at heart.

US PATENT HISTORY

The framers of the United States Constitution were already aware of the patent custom which was largely being practiced during the colonial rule. It is not surprising that the US patent law in its infancy was largely modeled on the English Statute of Monopolies Act. The practice influenced them so much that they decided it was the appropriate way to reward the inventors and encourage the advancement of science and technology. . It is still unclear as to the need for the Intellectual property clause in the Constitution. The first US Patent Act 1790 had some unique features like examination of patents, reduced patent fee, grant of patent to the first inventor.

It was not as if there were no opponents of the patent. Jefferson was one of the staunchest opponents so the patent system, especially during the early years of the patent law. He was very much concerned about the utility of the patent, the effects of monopoly and its ill effects on the society. There were states like Virginia, Maryland which had openly condemned property rights in idea. It is either unfortunate that we do not have any records of the opposition to the patent system (exclusive property rights in idea) during the discussions on the framing of the constitution or there was absolutely no opposition on this issue.

Over the years the courts have construed that the constitutional grant of power to Congress was mainly to promote the progress of science and useful arts, a founded public policy. There is almost no critical view of the judiciary regarding this aspect. Apart from the express reiteration that patents are not to be regarded as monopolies, perhaps the most interesting aspect of this statement is its movement from the premise of the constitutional purpose of patents to the conclusion that the property right is therefore to be protected. Whether or not the Constitution requires a liberal construction of patents, it has held that the intellectual property clause expressed no policy against the limits on the patent power

1. Colonial Rule Various states issued patents prior to the framing of the Constitution. The experience had a profound influence during the formulation of the Intellectual property clause and in the legislation of the first US patent Act. Patent custom involving exclusive grants of privilege for limited terms with respect to invention and importation existed in a number of the American colonies and states prior to the drafting of the Constitution. The patent system in the colonies had developed in parallel to English custom and there were two sources of authority, letters patent granted in England covering the American colonies and others granted by the royal governors in the various states. After the American revolution, the assemblies and legislatures continued to issue the patents although they were not formally invested with such powers. At the time of the independence, American economy was primarily agrarian; manufacturing was restricted for local consumption. The grants were more for the local states and people were unsure whether it was worth all the trouble and the time, as a result the patents issued were far and few. Probably the framers of

the constitution felt that these local grants must be extended at the federal level so as to encourage trade and commerce as well as prevent duplication of grants. They might have felt the need to clearly lay out the instruction in the constitution so as to bring about uniformity in the application and practice of the law.

2. Rumsey, Fitch petition

Madison was a great scholar and had served on the committee that had drafted the 1783 congressional resolution which included a recommendation to provide protection to authors and inventors. He was concerned that the lack of uniformity in the state laws concerning protection of literary works and inventions might hamper their growth. Consequently, it is not at all surprising that he proposed that Congress should have the power to grant copyrights for a limited time and to encourage the advancement of useful knowledge and discovery by "premiums and provisions." The latter proposal, although including invention within its ambit, is clearly not limited to invention. He even addressed the Congress that a legislation on protection of literary works and invention be passed at the earliest so that authors and inventors are not deterred by the fear of others imitating their work. There were several petitions by the inventors, addressed to the congress or to Madison on the issue of protection for their invention. These petitions posed several questions to the congress, there were several issues like whether the congress would pass separate laws or one generic law, whether the assignees and heirs be able to exercise the rights etc. In fact, these issues guided the Congress discussions on the matter. There was almost no debate about property rights in ideas and more discussions on the nature of the law. The first two petitions were presented and read to the House of Representatives on April 15, 1789. The first was by David Rumsey who sought protection for the books that he had authored. John Church was an inventor who sought protection for his inventions by vesting the rights of selling his invention in him, his heirs and assigns. The House appointed a committee to look into the matter which reported that "the committee have conferred with Mr. Churchman, and find that he has made many calculations which tend to establish his position, that there are two magnetic points which give direction to the needle, that upon this doctrine he has endeavored to ascertain from a given latitude, and a given variation, what must be the longitude of the place; and having applied his principles to many instances in Cook's voyages, has found the result to correspond with

considerable accuracy with the real facts, as far as they could be determined by the reckoning of the ship: That the object to which Mr. Churchman's labors are directed, is confessedly of very high importance, and his ideas on the subject appear to be ingenious: That with a view of applying them to practice, he has contrived a map and a globe, whereby to show the angles which are made by the real and the magnetic meridians in different parts of the earth: That he is also engaged in constructing tables for determining the longitude at sea upon magnetic principles: That the committee are of opinion that such efforts deserve encouragement, and that a law should pass to secure to Mr. Churchman, for a term of years, the exclusive pecuniary emolument to be derived from the publication of these several inventions.... On the subject of the petition of Doctor David Ramsay, your committee report it is their opinion, that a law should pass to secure to him the exclusive right of publishing and vending for a term of years, the two works mentioned in the petition." Thus, the committee had gone in detail to examine the invention of Churchman, its utility and established that he was the true inventor and he deserves the encouragement. It seemed like it was acceptable to provide protection to the invention as it was a means to encourage inventors. Why, exactly, was it restricted to exclusive rights over the invention is unclear?

The Fitch Petition

John Fitch presented a petition before the House on the 13th May 1789, stating that he was the original inventor of the steam powered boat and that he had already received exclusive rights over his invention in many states. He claimed that he was the first to invent it and prayed that all others be excluded from using or improving upon his invention until his patent expired. He states: "the House will undoubtedly perceive that the Question of the Experiment, was, Whether or not Steam could be usefully applied to Navigation? and not, What Mode would best answer the purpose? because, in the latter Case, the person who should, by great Labor and Expense, fully prove the utility of the plan, by making the Experiment in any one mode, for he could not try more than one at once, would secure to himself no Advantage in the Discovery, because a Dozen Persons, or more, might, by varying the mode of applying the power, demand at a future Day a participation of the Emoluments or Advantages of a Discovery, which he, through great Difficulties and Expense, had brought into valuable existence..." He prayed that he be secured by law in his rights "in such a manner,

upon the true principles of priority of invention, as will preclude subsequent improvers upon his principle from participating therein until the expiration of the term of his exclusive grants." It is quite clear from the Fitch petition that he feared his competitors could be granted a patent before him. Probably, he stated that he was the first inventor, to emphasize this point. This in fact turned out to be the law in United States. To this day US is the only country to award patents to the person who invented first while the rest of the world follows the 'first to patent' policy. His competitors like Rumsey might have succeeded in proving that their improvement of the steam boat was substantial enough to merit a patent. Therefore, he specifically stated that any improvement on his invention should not be granted a patent or be allowed to use it on his patent until his patent expired. This turned out to be the US patent law. These petitions threw up a lot of issues before the House and influenced the future patent law of United States.

1. Constitution and patent clause and Jefferson

It is but surprising , to find that there is no record as to any opposition of significance in the constitutional deliberation on the subject of Intellectual property clause. There were quite a few states that didn't agree to the inclusion of the clause. Thomas Jefferson would have quite likely to have opposed it, but he was not part of the delegate to the Constitutional Convention. Strangely, enough the supreme court has time and again referred to Jefferson as the architect of the patent system while he had his reservations about it, which he expressed to a French citizen in 1787, "though the interposition of government, in matters of invention, has its use, yet it is in practice so inseparable from abuse, that they think it better not to meddle with it. . . ." But at the same time as we can see the Framers of the constitution were meddling with it.

The Constitution was drafted based on the lessons drawn from the operations and experiences of the states, but it cannot be said how much of a role colonial patent custom influenced the ultimate outcome. Constitutions of states like Maryland and North Carolina had explicitly discouraged any sort of monopoly including the limited time monopoly granted to authors and inventors. According to the Maryland constitution of 1776, Article XXXIX, "monopolies are odious, contrary to the spirit of free government, and the principles of commerce; and ought not to be suffered.". Similarly,

the North Carolina constitution of 1776, Article XXIII, stated "that perpetuities and monopolies are contrary to the genius of a free State, and ought not to be allowed."

It is uncertain what made the delegates to reverse the Article II of the Articles of Confederation which had precluded the Congress from issuing patents. Their must have been a strong reason which warranted that the Congress should have the power by way of the intellectual property clause and such power should be expressly set forth rather than being merely implied in any other clause like the commerce clause. Maybe the delegates thought that it was eternal duty of the government to promote the progress of useful arts and sciences and by including the clause on the intellectual property in the constitution it wanted to eliminate any such tendency to ignore the above duty. It is also quite unique that amongst all the clauses in the constitution, the intellectual property clause sets forth the mode of exercising that power (by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries). Why did the delegates think that it was important to specify the mode of accomplishing the objective? Too much reading into this clause has lead the court to interpret that the congress can promote science and useful arts only by giving exclusive rights for a limited time. But, the question arises as to how much time is limited time? This reading into the clause has prevented the congress from looking at other alternative ways of promoting science and useful arts.

That they should do so is interesting because there are numerous ways to promote the progress of science and the useful arts which have nothing whatever to do with the granting of exclusive rights for limited times in inventions or discoveries. Indeed, a strong movement would arise in Europe in the nineteenth century which would argue that this was precisely the wrong way to encourage industrial innovation. Why then should the Constitution make specific reference to promoting the progress of the useful arts by securing exclusive rights in their inventions to inventors for limited times? The answer in no small measure seems to have been predicated on the fact that they desired to follow the English practice of granting exclusive rights through the issuance of patents or something similar and were not at all certain that the Congress would have the power to do so without an explicit grant of authority.

Jefferson's concern over monopoly

It is very well known that Jefferson was ambivalent about the working of the patent laws. But he was not alone in his concern. George Mason, a Virginian, refused to sign the constitution as he thought the intellectual property clause might promote monopoly in trade and commerce. The New York convention ratifying the Constitution recommended certain amendments like the power of congress to grant monopolies to companies which give them an advantage in the commerce. Likewise, the ratifying conventions of Massachusetts, New Hampshire, and North Carolina requested an amendment "that congress erects no company of merchants, with exclusive advantages of commerce." But Jefferson was the most prominent person who had expressed reservations over the granting of limited time exclusive property rights in ideas.

On receiving the draft of the Constitution from Madison, Jefferson wrote back to him expressing his concern that the constitution did not have a bill of rights. In setting forth his views on what the bill of rights should include, he indicated that it should provide "clearly and without the aid of sophism . . . for the restriction against monopolies." He did let Madison know about this discontent after the Constitution had been ratified: "It is a good canvas, on which some strokes only want retouching. What these are, I think are sufficiently manifested by the general voice from North to South, which calls for a bill of rights. It seems pretty generally understood that this should go to . . . Monopolies. . . . It is better . . . to abolish . . . Monopolies, in all cases, than not to do it in any. . . . The saying there shall be no monopolies lessen the incitements to ingenuity, which is spurred on by the hope of a monopoly for a limited time, as of 14 years; but the benefit even of limited monopolies is too doubtful to be opposed to that of their general suppression". He probably knew about the working of the patents in Britain and may have been aware of the problems and ill effects in Britain. Maybe, he was aware of the leading arguments against the grant of patents in England. In his response to Madison he did not distinguish between monopolies as good or bad unlike others he viewed monopoly' limited or otherwise to be bad for the society. He argued that "the benefit even of limited monopolies is too doubtful to be opposed to that of their general suppression." But, Madison firmly disagreed He argued that patents and copyrights were monopolies that should be tolerated because of the public good they could produce. This was in essence the common law justification for these limited term

monopolies. After hearing Madison, response he probably resigned to accept it. As the first Secretary of State, he was responsible for administering the patent laws. He took that responsibility seriously, he carefully examined each and every invention, ascertained that it was new and useful and on that basis of this, he would recommend for the grant of a patent.

But, even after administering the grant of patents, he seemed to be skeptical about it. Probably, this was the reason he never patented his inventions like his collapsible chair and the refined plough, he freely gave away all of his inventions to the public. In his view, nations without patent systems did as well as those with patent systems in the number and nature of their inventions.

1. Patent Act of 1790

The first US patent Act was passed in 1790, which operated only for three years and was replaced by the Patent Act of 1793. The act provided for the issuance of the patent to “any person who hath invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used. . . .” Although, the constitution does not make any specific reference to patents, the act refers to the part of the constitution “to promote the progress of useful arts”.

It was one of the earliest patent acts which functioned on an examination system and thus departed from the English system of registration system. The patent would be granted only after the approval by at least two out of the three of the Board members. The Secretary of State, the Secretary for the Department of War, and the Attorney General constituted the Patent Board. The Board had a lot of discretion and had the power to formulate the general rules under the Act of 1790: “One of these was, that a machine of which we were possessed, might be applied by every man to any use of which it is susceptible, and that this right ought not to be taken from him and given to a monopolist, because the first perhaps had occasion so to apply it. Thus a screw for crushing plaster might be employed for crushing corn-cobs. And a chain-pump for raising water might be used for raising wheat: this being merely a change of application. Another rule was that a change of material should not give title to a patent: As the making a ploughshare of cast rather than of wrought iron; a comb of iron instead of horn or of

ivory, or the connecting buckets by a band of leather rather than of hemp or iron. A third was that a mere change of form should give no right to a patent, as a high-quartered shoe instead of a low one; a round hat instead of a three-square; or a square bucket instead of a round one. But for this rule, all the changes of fashion in dress would have been under the tax of patentees." Jefferson probably was concerned that a lot of frivolous patents would be granted for slight changes in application or a change in form to things already in use. He feared that this would rob the people of the general use of the existing art.

Jefferson also later expressed the opinion that a combination of known implements should not be patentable: "If we have a right to use three things separately, I see nothing in reason, or in the patent law, which forbids our using them all together. A man has a right to use a saw, an axe, a plane separately; may he not combine their uses on the same piece of wood?"

The Act made it mandatory to file in a specification which described the invention in detail. Jefferson ensured that the written description of the invention aided in understanding the invention and that it was accurate. In fact in the latter years the Patent Office itself had person to write the specification for the patentees, although he was not officially appointed. The Section 4 of the act is similar to the English practice. Thus, it requires: "that the grantee or grantees of each patent shall within one calendar month, next after the sealing and delivery to him or them of each patent, deliver to the a specification in writing, containing a perfect and exact description, accompanied with drafts and explanations (if the subject matter of such inventions and discoveries shall require the same in order to be understood) of the thing or things by him or them invented or discovered, and generally described as aforesaid in the said patents; which specifications shall be so particular as not only to distinguish the invention from other things before known, but also to enable a workman or other person skilled in the art, science or manufacture whereof it is a branch, or wherewith it may be nearest connected, to make, construct, or use the same, to the end that the public may have full benefit thereof after the expiration of the patent term; which specification shall be filed in the office of the said and certified copies thereof shall be competent evidence in all courts, and before all jurisdictions, where any manner or thing touching or concerning such patent, right or privilege shall come in

question.” The language used in Act is remarkably consistent to the English Practice and is a perfect illustration that they had a good knowledge of the English practice and the recent developments in the English courts.

Thus, although the act shows traces of the English practice, it also departed by adopting an examination process. It is unclear how and why they adopted the examination process. Probably, they felt that they could avoid granting frivolous patents if they adopted this system rather than the registration system which was the English practice.

1. Patent Act of 1793 The act of 1790 had occupied most of the time of the Secretary of the State, with the increasing activities and also the increased number of the patents, Jefferson was burdened with his duty as the examiner of the patents. Moreover, there were certain complains from the patentees about the 1790 Act. Therefore, a new bill was drafted to look into these aspects which culminated as the Patent Act of 1793. Jefferson himself had proposed a lot of changes to the earlier act. But, not all of his proposed changes were accepted. In fact Fitch argued that Jefferson’s proposal to register the patent in every district court was rightly called in question by Fitch. According to him this would be expensive and time consuming. Some of the changes proposed in the bill are worthy of comment. First, the Secretary of State would issue a patent on the payment of a set fee into the U.S. Treasury rather than payment of fees to the various individuals involved in the process. Second, the bill allowed the petitioner to petition for "an exclusive property" in the invention. This was definitely a move away from the popular notion of patents as privileges. It is not known as to what caused this change in view. But, this proved to be a significant change which became the cornerstone for the justification of the patent system. Third, the bill required that the board would only make the material of the specification, including any models, drawings and specimens, available to the public at the expiration of the patent term. Probably there were complains from the inventors or fears that access to specification might allow other to easily imitate their invention. Fourth, the bill contained an express proviso that obtaining a federal patent depended on surrendering any state patent rights that the petitioner had obtained before the ratification of the Constitution. Fifth, the system of examination was dispensed with, and patents were issued

on the registration. The novelty and utility of the patents could be determined by the courts. As the patent examinations were occupying more time of the members of the board, they could not spare much time for their higher duties, the judiciary was given the responsibility in case of a dispute over the newness of the invention. Now, it was up to the courts to decide the validity of the patent as the board was authorized to grant at the first instance without having to examine the novelty of the invention.

How long is long enough? In 1813, several years after he had left the post of the Secretary of the State, in replying to Eli Whitney's query he replied that "certainly an inventor ought to be allowed a right to the benefit of his invention for some time. It is equally certain it ought not to be perpetual; for to embarrass society with monopolies for every utensil existing, and in all the details of life would be more injurious to them than had the supposed inventors never existed; because the natural understanding of its members would have suggested the same things or others as good. How long the term should be is the difficult question. Our legislators have copied the English estimate of the term, perhaps without sufficiently considering how much longer, in a country so much more sparsely settled, it takes for an invention to become known, and used to an extent profitable to the inventor." Jefferson shows his discomfort towards monopoly and effects of monopoly if the rights were perpetual. It is clear that he wanted to balance the social interest and the interest of the inventor. The duration of the patent must try to balance out these two interests.

Natural rights in inventions

Jefferson is very well known for his views against exclusive rights in ideas but he also dismissed the natural rights in invention. He said that some inventors pretended that they have a natural and exclusive right to their inventions, not for themselves but also to their heirs who could inherit the rights after the life of the inventor. He questioned whether the origin of any kind of property is derived from nature; it would be extraordinary to admit a natural and even an hereditary right to inventors. He argued that no individual has a natural right in a separate property in an acre of land, how could an inventor acquire such rights. He argued that "by a universal law, indeed, whatever, whether fixed or movable, belongs to all men equally and in common, is the property for the moment of him who occupies it, but when he relinquishes the occupation, the property

goes with it. Stable ownership is the gift of social law, and is given late in the progress of society. It would be curious then, if an idea, the fugitive fermentation of an individual brain, could, of natural right, be claimed in exclusive and stable property. If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility, but this may or may not be done, according to the will and convenience of society, without claim or complaint from anybody. Jefferson was of the opinion that "(i)n some other countries it is sometimes done, in a great case, and by a special and personal act, but generally speaking, other nations have thought that these monopolies produce more embarrassment than advantage to society; and it may be observed that the nations which refuse monopolies of invention are as fruitful as England in new and useful devices." If ever, these aspects were considered by the courts whether patents are necessary, then Jefferson affords an answer wherein he believes that there are other ways of encouraging inventors and according to the needs and necessities of a nation, it may or may not be adopted. Probably, he was convinced that there were other ways to promote innovation and hence might not have subscribed to the narrow interpretation of the intellectual property clause; it is not clear whether he thought that providing exclusive rights to the inventors was the only way of promoting useful arts. From his opinion above it can be safely said that he may not have

viewed the Intellectual property clause in a narrow and restrictive sense unlike the courts of the present day.

Throughout his life, Jefferson doubted the merits and efficacy of the patent system. Significant documentation exists showing his early opposition to the creation of the limited term monopolies called patents, and the effort he expended to administer the first patent system. A point, which has gone largely unnoticed but is highly significant, is that two decades after he had ceased to have the primary responsibility for the operation of the nascent United States patent system Jefferson expressed much skepticism concerning both its usefulness and its effectiveness. He clearly did not believe that patents promoted the progress of the useful arts as set forth in the Constitution, at least to any significant degree. Indeed, to the end of his life, Jefferson privately believed that the patent system more often served to permit patentees to obstruct rather than to promote the progress of useful arts.

Judicial Construction Under the 1793 Patent Act, the registration system was to come into effect wherein they would grant a patent on the face of it without ascertaining the novelty and the utility of the invention. The courts were to ascertain this in case of an infringement or challenge to the patent. Thus, the development of the patent law, lay firmly in the judicial construction of the statutory standards. In the case of *Earle v. Sawyer*, the question whether patents should be granted to improvements, if so what sorts of improvements deserve patents? Earle had made an improvement over a Shingle Mill. A perpendicular saw was replaced by a circular saw which made the task of veneering and sawing picture frames much easier. Justice Story said it "was so obvious to mechanics, which one of ordinary skill, upon the suggestion being made to him, could scarcely fail to apply it in the mode which the plaintiff had applied his. It is not sufficient, that a thing is new and useful, to entitle the author of it to a patent. He must do more. He must find it out by mental labor and intellectual creation, it must be what would not occur to all persons skilled in the art, who wished to produce the same result. There must be some addition to the common stock of knowledge, and not merely the first use of what was known before. The patent act gives a reward for the communication of that, which might be otherwise withholden. An invention is the finding out by some effort of the understanding. The mere putting of two things together, although never done

before, is no invention.” Probably the seeds of non-obviousness requirement were sown through this judgment, although the judgment said there is no such requirement under the act to secure a patent.

Other concepts like substantial novelty where existing art is tested and compared with claimed invention. If the existing art performed substantially the same function in substantially the same way giving out substantially the same result, then the invention should not be regarded as new. This is the doctrine of equivalence which is true even to this day. Thus the cases decided in the early days still remain the standard for testing the novelty of the patents. The judicial construction of the statute was mainly due to the change from the examination to the registration system.

1. Fear that wasn't to be came to be The modern system of technical examination of the patents owes its origin to the Patent Act of 1836. The examination system was re-introduced the which is still in use today. The registration system had left a lot issues to be determined by the courts. This also resulted in a lot frivolous patents being issued which if remain unchallenged in the courts would work for the entire term. From, 1836 onwards, each application was scrutinized by technically trained examiners to ensure that the invention conformed to the law, and constituted an original advance in the state of the art. It is believed that this act legitimized or strengthened the view of property rights in a patent. “Before then,” said Lincoln while addressing the Springfield audience in 1860, “any man might instantly use what another had invented; so that the inventor had no special advantage from his own invention. The patent system changed this; secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the fuel of interest to the fire of genius, in the discovery and production of new and useful things.” Had, he lived to invention is the most appropriate way to reward the inventive spirit. Had Lincoln lived to witness the transformation in the twentieth century, he might have altered his views about the role of the patents in innovation. Jefferson's worst fears about the patent monopolies, which may not have occurred during his life time turned out to be true. The change in the attitude of the judiciary towards the patent system led to the conceptual development of the patents and at the same time the broader outlook enabled the patentees to stretch beyond the boundaries of the patent law. The

Industrial revolution, the emergence of the United States as a strong political force, the decline of the British industry and the emergence of the new form of individualist capital market meant strategic use of the patents to gain market advantage. The controllers of the capital decided the fate of the industry and the rate of technological progress. The giant corporations surfaced from nowhere to upstage the individual inventor. The capital deprived individual inventor could no longer dream of reaping dividends from his invention. The task of product development and distribution and sale of the newly developed product meant heavy capital investment and entailed huge risks which deterred him from going the full length without the safety net provided by the corporations. He either sold his inventions to the company or became a part of its workforce. Corporations devised ways and means to own patents from individual inventors and other companies owning relevant patents. All this, in the hope of controlling the industry and wiping out competitors. The market and industry, heavily insulated by patents had become an impenetrable fortress. They were now armed with the most potent weapon in their arsenal; infringement suits, broad claims, restrictive licenses, patent pools, auxiliary patents, employee agreements, non disclosure clauses, unholy alliances etc. The competitors were either wiped out or forced to align with their major competitors. The scenario had changed, the individual inventor had given way to the giant corporations which readjusted the patent policies in the twentieth century. A committee member of the National Economic Commission in the early 1930's noted that "the overwhelming proportion of significant inventions now came out of scientific laboratories". The patent system that was meant to protect the inventor is now protecting the monopolizer of inventors. The Iron Trade Review, in 1915 carried an article which said that the patents in the US are brought up in large numbers for the purpose of suppressing competition. Monopoly on a industry by means of patent control constituted a monopoly of monopolies, such monopolies strangles the sciences and the useful arts." Jefferson set very high standards in granting as a patent administrator which resulted in very few patents being granted during his tenure. He personally examined each and every patent application but his good work was undone due to the changes in the patent act of 1793 as it adopted a registration system instead of the examination system followed under the previous Act. Thus, anyone who swore by the originality of his invention would be granted patents leading to a flurry of frivolous patents which

resulted in reverting to the examination under the Patent Act of 1836. Although, the patent act was passed to promote useful arts and science, there is no express sanction against the suppression of inventions, which the corporations of the twentieth century achieved by various means.

The AT&T and GE counsel, Frederick Fish opined that as business units expand, patent owning corporations supplant investors in the exploitation of the patents. Inventor became an employee selling his genius to the corporation. In 1885, about 12% of the patents were being granted to the corporations but by 1950 about three fourth of the patents were owned by the corporations.

Alexanderson, one of the leading engineers in the GE company expressed anguish over the failure of the patent system to protect the lone inventor, he groused that the system protects the institutions which favour inventions. This is the true reflection of a frustrated inventor who was resigned to the fixed salary of the corporation unable to exploit his inventions on his own, complaining about the patent system failing in its objective of protecting the inventor, instead supporting the corporations to maintain their hold over the inventors. Edwin.J.Prindle, in his pioneering work "Patents as a factor in manufacturing business", elaborates on the strategic use of the patents to gain industrial advantage. He elucidates the ways and means of suing patent systems for the purpose of holding corporate monopoly. Patents could be used as the most effective means of controlling competition enabling to gain total command over the market, dictating the price independent of market competition and cost of production. He considers it as the only legal form of monopoly; he cited a court decision which views the patentee as the czar. He gives a restrictive interpretation of the intellectual property clause in the constitution, "cries of restraint of trade and the impairment of the freedom of the sales are unavailing because for the promotion of the useful arts, the constitution and the statute authorize this monopoly...." It clearly speaks volumes about the rigid interpretation of the original purpose of the inclusion of the intellectual property clause in the constitution. The view that monopoly is the only way of rewarding the inventor is over emphasized by the judiciary in its decisions. It is arguable whether that was the original intent of the framers of the constitution. The reason for such clause in the constitution was to discourage varied policy adopted towards the patent laws in the various states, an

explicit mention in the Constitution would bring about uniformity in the patent practice which would aid in the technological advancement of the primarily agrarian economy. The restrictive view only aided in promoting monopoly. Jefferson had doubts about the working of the limited period monopolies, but little did he know that in the years to come corporations would find ways and means to extend their monopoly even after the expiry of the original patents. Prindle states that “if a patent cannot be secured on a product, it should be secured on processes for making the product; if not feasible then the product should be tied up in some way with a patent on some other product, process or machine. He advised that corporations should bind the employee inventor through a contract to assign all the inventions during the course of the employment, thus encouraging the subversion of the original intent of patent system. The non disclosure agreements, restrictive trade practice clauses became a regularity form hereon. AT&T having anticipated the expiry of their patents, surrounded their business with all the auxiliary protection. They found themselves in a position wherein they could close the doors on their rivals through a spate of infringement suits. An AT&T lawyers explains the companies success: “It appears to me that the policy of bringing suit for infringement on apparatus patents is an excellent one because it keeps the concerns which attempt opposition in a nervous and excited conditions since they never know where the next attack may be made, and since it keeps them all the time changing their machines and causes them ultimately, in order that they may not be sued, to adopt inefficient forms of apparatus.” AT&T aggressively pursued the policy of buying relevant patents from the inventors or companies which enabled them to monopolies the telephone and radio industry. They gained virtual control over the radio broadcasting by buying the “three vacuum” tube from De Forrest, thus controlling the industry. Through licensing agreements, mergers, take over, purchases etc, it had increased its patent pools from two original patents to 9,255 patents. Floyd.L.Vaughn, after an FCC investigation of the telephone industry viewed that “by amassing thousands of patents on inventions in the whole field of communication....American Telephone dominates the telephone and also controls the exploitation of potentially competitive and emerging forms of communication. It thus excludes others from its field and avoids being excluded by them. Would be rivals may enter and remain only as licensees under restricted conditions. It pre-empted for itself new

frontiers of technology for exploitation in the future and in the meantime, protects what is already developed. It keeps itself in a commanding position for the exchange of patent rights. In short, it employs patents to maintain its dominance in communication.”

GE followed a constant policy of funneling into its control all the patents held by its licensees and touching any phase of the incandescent lighting industry. GE has acquired important patents relevant to the lighting industry through purchase of companies, patents and their own research as well as through the numerous court battles helped secure GE the monopoly of the manufacturing, using and vending of the modern electric light. In *United States V General Electric Company*, 82 F supp, 753. opined that the strategies of the big Corporations was to prolong the monopoly over the patents vital to their industry by suppressing, delayed introduction of patents, assignments of employee patents, incomplete disclosures in the patent applications, auxiliary patents. The court opined that “General Electric’s apparently impregnable position was a formidable barrier to anyone who contemplated entering the lamp manufacturing field and this coupled with the knowledge that it controlled the manufacture of lamp bases, lamp manufacturing machinery, along with a tight block on the supply of glass, created a situation sufficient to deter entry. The link of unlawful monopoly is apparent from the fact that upon expiration of the lawful patent monopoly in 1933, there was no new entry into the field.”

Moreover, various companies who had industry relevant patents entered into agreements with their competitors wherein they exchanged mutually exclusive patents relevant their own industry. The deadlock in the radio industry lead to the above process, where by the end of 1920’s there was a patent pool in the radio industry. After the World war I , the British Marconi Company threatened to dominate the radio industry in US, this forced GE to setup Radio Corporation of America to which it transferred all its radio patents to RCA. Further, RCA bought the shares of the American Marconi corporation which was subsidiary of the British Marconi corporation. This strong combine left the competitors with little hope of competing with each other as they owned vital patents of the components of the radio, thus forcing companies like Westinghouse, AT&T to join their patent in the RCA radio patent pools which also enabled them to obtain patents in electric light

and telephone from its competitors. Thus, not only was there a radio patent pool but patent pools in telephone and light industries also.

The early half of the twentieth century clearly vindicates the fears that Jefferson had about monopoly as a reward for the promotion of the useful arts and sciences. The lone inventor was no longer a patentee, if so he had lost control over it. Corporations used the patent laws to position themselves to control the industry and the market.

The American patent system went through a great deal of transformation in the twentieth century but the tenets of the earlier patent acts still remain in practice. Unfortunately, with the advent of the global commerce and the increased power of the individual corporations, the patent law was modified and subverted to their convenience. The recent judgments, especially on the Intellectual property clause, are a restrictive reading of the original intentions of the framers of the Constitution. In the wake of the increase in the term of the copyright protection one is left to wonder like Jefferson about the term of the exclusive rights. Isn't it any irony to see that courts use Jefferson's views to further the cause of exclusive property rights in inventions while Jefferson was averse to any such thought?

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