

ON THE ORIGINS OF PATENT LAW

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In this brief essay I propose to survey the beginnings of patent law. While my purpose is primarily to set patents in their proper historical perspective, I hope also to trace the development of the conceptual origins of patents, that is, the idea of a patent system.

The first recorded reference to patents I have found is in Aristotle's Politics, composed in the fourth century B.C. In the course of a discussion of rival descriptions of a good constitution, Aristotle mentions a proposal by one Hippodamus. According to Aristotle, Hippodamus of Miletos calls for a system of rewards to those who discover things useful to the state. Aristotle condemns this proposal in the following passage:

Concerning the matter of those who discover something advantageous for the city, to legislate that they receive some honor is not safe, though it sounds appealing; it would involve harassments and, it might well happen, changes of regime.<sup>1</sup>

Aristotle here shows a concern for the general tenor of Hippodamus' proposal, which appears to encourage innovations in all fields, for example law. In the section of the Politics that refers to Hippodamus, Aristotle asserts that unlike "the other sciences," law should not change too quickly. This is because too rapid change will weaken the habit of obedience to law that is so valuable to a state.<sup>2</sup>

Hippodamus quite aptly introduces several themes that characterize patent laws right down to the present day. First is the obvious fact that Hippodamus was himself a technically

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<sup>1</sup> Aristotle, Politics, Book II, Chap. 8, lines 23-26 (C. Lord, trans., 1984, University of Chicago Press), at 72 (footnote omitted). The translator mentions in a footnote that by harassment (*sykophantia*) Aristotle meant blackmail, and that he was concerned that citizens might pretend to "discover" various types of malfeasance on the part of officials and prominent public figures. *Id.*, at 250 n.56. Other translators translate *sykophantia* as encouragement to inform, B. Jowett Trans., Modern Library Edition), at 105, or sedition, Personal Letter from Professor James Doull, Classics Department, Dalhousie University.

<sup>2</sup> Aristotle, Politics, supra note 1, at 73.

trained person. Quite clearly this training gave him what might be called a "problem-solving" outlook on all issues, including the design of the optimal state, or utopia. This mode of thinking has been very significant in the development of patent law; it is thus only appropriate that the very idea of a patent law came from a person who thought this way.

And so the belief in innovation that made Hippodamus a celebrated architect led him to propose a legal instrument to encourage innovation. And this proposal contains the seeds of a practical utilitarianism: honor the creator of a useful thing, and society will get more useful things. This proposal, this mode of thought, is the core of all patent systems, ancient as well as modern.

Much of importance to the history of patents is anticipated in Aristotle's response as well. Aristotle's main point is that rewards to individuals can cause problems for the state; in honoring one who discovers something new, the state may actually weaken itself. Why might this be so? The answer, for Aristotle, would likely center around the notion of the good. If citizens seek only individual honors, rather than the health of the community, then the community might suffer; this is true even in cases where Hippodamus' proposal leads to real, not spurious, discoveries. Apparently Aristotle sees a danger in introducing the notion of "utility" into judgments about what is desirable. For if any citizen can propose a legal innovation that is "useful to the state", this might imply that the current legal regime is less useful, or even illegitimate. Thus the idea that encouraging new proposals might weaken the state. The better state, according to Aristotle, is one where citizens obey the law not because it is in their interest, but because it is good to do so.

What is important here is the juxtaposition of individual interest and the good of the community. As I will try to describe in this essay, these opposing forces have often exerted a strong pull on the development of patent law. What is interesting about Aristotle's comments is that they adumbrate the essential tension -- it might even be called a paradox -- inherent in a system where social benefits via technological progress are achieved by means of private rewards.

Although in recent years scholars have begun to revise the orthodox view of the Middle Ages as a period devoid of innovation, this era does not appear to have been conducive to the idea of patents, at least in the West.<sup>3</sup> Perhaps this is

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<sup>3</sup> One historian, however, claims that the modern patent system has its origins in the Byzantine Empire:

It is likely that the modern monopoly originated in Byzantium, and became the invention patent at the

because of the prevalence of rigid social hierarchies, which discourage the recognition of an individual inventor's genius.<sup>4</sup> Perhaps it is because recent historians are wrong, and not much in the way of innovation was occurring. Whatever the reason, one must skip ahead to the early Renaissance to find the first references to a real patent system.

Historians recognize the key intellectual change of the Renaissance as the renewed emphasis on the individual. It is no surprise that in this environment patent systems -- with their recognition of discrete inventions attributable to identifiable individuals -- began to appear and flourish.

The first regular administrative apparatus for granting patents -- the first real patent "system" -- arose in Venice in the late fifteenth century. Isolated grants in Venice and elsewhere were made earlier; in Venice in the early fourteenth century (for corn mill designs), and to the celebrated Florentine architect Brunelleschi, for his invention in 1421 of a barge with hoist for transporting marble.<sup>5</sup> But not until the Venetian Senate's 1474 Act was the practice regularized:

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 this 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

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Renaissance when numbers of inventions appeared. A traveller of the twelfth century, Benjamin of Tudela, mentions an exclusive privilege for dyeing cloth in the semi-Byzantine kingdom of Jerusalem.

Frumkin, Early History of Patents for Invention, 26 Trans. Newcomen Soc'y 47, 47 (1947). Frumkin notes several other isolated instances of protective grants: in Bordeaux, in 1236, a fifteen year monopoly for the manufacture of cloth; in 1331, by King Edward III of Great Britain, a nonexclusive grant to export woollen cloth. Id., at 48.

<sup>4</sup> The uneasy relationship between the craft guilds and early Renaissance patents suggests that the guilds, either directly or indirectly, may have had a hand in the suppression of innovation, if not patents themselves. See C. Macleod, Inventing the Industrial Revolution, supra, at 13 (describing successful efforts by Cutler's guild to block issuance of a patent on new knife handle design).

<sup>5</sup> See Frumkin, Early History of Patents for Invention, 26 Trans. Newcomen Soc'y 47 (1947); Prager, A History of Intellectual Property from 1545 to 1787, 26 J. Pat. & Trademark Off. Soc'y 714 (1944). On Brunelleschi, see L. Sprague de Kamp, The Ancient Engineers (1963).

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 10 years. And if anybody builds it in violation hereof, the aforesaid author and inventor shall be entitled to have him summoned before any Magistrate of this City, by which Magistrate the said infringer shall be constrained to pay him hundred ducats; and the device shall be destroyed at once.<sup>6</sup>

The Venetian Act lays out all the essential features of a modern patent statute. It covers "devices;" states that they must be registered with a specific administrative agency; says that they must meet the requirements of being "new and useful," "reduced to perfection," and "not previously made in this Commonwealth;" provides a fixed term of ten years; and sets forth a procedure and remedy to determine infringement. Interestingly, the Venetian Act reserved to the Republic the right to use any invention without compensating the inventor.<sup>7</sup> This is an early attempt to reconcile individual interest with the good of the community, a problem identified in Aristotle's critique of Hippodamus' patent-like proposal. It also shows that the reservation of such a right was not deemed unfair; it implies a view that the inventor's protection, provided by the grace of the state, ought naturally to be subject to the needs of the state.

The opening of trade in Europe insured that the new Venetian concept would spread. As Italian craftsmen -- particularly glass workers -- fanned out across Europe, they brought with them the idea of a patent system. Thus according to one scholar of the British patent system,

[S]ix of the first nine patents in the Archives of Brussels, for example, were issued to Italians. It is no coincidence that the first recorded patents in several countries at this time were for glassmaking, a skill in which the Venetians excelled. German merchants trading with Venice also returned with the idea, and the petty German states were among the first in Europe to grant patents.<sup>8</sup>

Patents came to Great Britain by this route, sometime in the middle of the sixteenth century. The chief minister under Elizabeth I, William Cecil (Lord Burghley), used patent grants as an inducement for foreign artisans to introduce continental technologies into England. Thus what later became the Anglo-

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<sup>6</sup> Mandich, Venetian Patents (1450-1550), 30 J. Pat Off. Soc'y 166, 177 (1948).

<sup>7</sup> Id.

<sup>8</sup> C. MacLeod, Inventing the Industrial Revolution: The English Patent System, 1660-1800 (1989), at 11.

American patent system was ushered in as a mercantilist instrument -- what today would be called a "strategic international trade" policy. The idea was to lure emigrants with desirable skills and know-how with the promise of an exclusive privilege. Faint glimmers of this early policy survive in certain odd corners of today's patent laws, mostly by way of favorable treatment for domestic inventive activities.<sup>9</sup> Note that this policy reflects another attempt to balance the rights of the community against the individual interests of inventors.

With the accession of James I in England in the early seventeenth century, patents became less an incentive for the introduction of new arts and more a royal favor to be dispensed to well-placed courtiers. Under his rubric "patents" were granted on such enterprises as running ale-houses. Parliament, whose members represented many trades injured by the special privileges being granted under the name of patents, was displeased. Thus arose the Statute of Monopolies of 1624. This statute called on the common law courts to review all privileges granted by the crown, and outlawed all but those based on true inventions.<sup>10</sup>

Even with the Statute of Monopolies in effect, the British patent system remained a largely informal administrative apparatus. After the vicissitudes of the Civil War period, during which the Cromwell government "called in" all extant patents and privileges, the status quo ante was for the most part restored. Court influence was still helpful until the latter part of the eighteenth century. Patent applications were registered rather than examined. And, most tellingly, very few patents were granted.

But as the Industrial Revolution picked up steam (so to speak), attention began to focus on patents once again. An important change at this time was the increasingly stringent requirement that the applicant for a patent describe his invention clearly and completely, a development most often associated with Judge Mansfield's 1778 opinion in Liardet v. Johnson.<sup>11</sup> The importance of the specification requirement is

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<sup>9</sup> See Chisum, Foreign Activity: Its Effect on Patentability Under United States Law, 11 Int'l Rev. of Ind. Prop. & Copyright L. 26 (1980).

<sup>10</sup> C. Macleod, Inventing the Industrial Revolution, supra, at 15.

<sup>11</sup> See Adams & Averly, The Patent Specification: The Role of Liardet v. Johnson, 7 J. Leg. Hist. 156 (1986) (arguing in opposition to earlier writers that Liardet represented the culmination of eighteenth century trends rather than a sharp break with past practice).

that it reflected a changed perception about what the inventor was contributing to society in exchange for the patent grant. Under the original patent systems, society's benefit was the introduction of a new art or technology into the country. By the late eighteenth century, the primary benefit was seen as the technological know-how behind the inventor's patent. The beneficiaries on this view were not just the public, but instead others skilled in the technical arts who could learn something from the patentee's invention. This was a major change in the economic role of patents, for it shifted the emphasis from the introduction of finished products into commerce to the introduction of new and useful information to the technical arts. While it is difficult to speculate on the significance of this transition, it does seem to address a complaint voiced by Lord Burghley over the original patent system -- its dismal success rate in introducing new industries to the country. Perhaps paradoxically, the emphasis on technical specifications, while recognizing that not every invention will lead to a new industry, may have more efficiently fostered the growth of industry as a whole, by ensuring that up-to-date technical information was disseminated rapidly after its creation.

Although the overall contribution of the patent system the Industrial Revolution has been a matter of doubt in historical circles, it seems no coincidence that the patent system matured alongside the early industrial technologies. One historian, H. I. Dutton, noted that the British patent system of this period was less than water-tight from the inventor's point of view. But Dutton argues that this actually redounded to the benefit of the economy as a whole, since "leaks" in the grant to one inventor redounded to the benefit of other inventors.<sup>12</sup>

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<sup>12</sup> In this thorough review of the role of the patent system in the "first" Industrial Revolution in Great Britain, Dutton concludes that the system was instrumental in fostering almost all of the key technologies of the era. In addition, in chapters on "Trade in Invention" and "Investment in Patents," he documents the historical connections between patents and the financing of invention, thus illustrating that the early patent system did not reward innovation directly, but instead played much the same role it does today. H. Dutton, supra, at 103-48. In addition in his conclusion Dutton argues that the patent system's inefficiencies actually made it close to an ideal system, since it encouraged invention but did not protect new technology too much from those who would try to improve it. Id. at 204-05. See also MacLeod, Accident or Design? George Ravenscroft's Patent and the Invention of Lead-Crystal Glass, 28 Technology & Culture 776-80 (1987) (describing long time lag between invention of lead crystal glass and introduction of final product with "bugs" all worked out); Scherer, Invention and Innovation in the Watt-Boulton Steam-Engine Venture, 6 Tech. & Culture 184 (1965) (role of the patent system in Watt's seminal steam engine invention).

Patents were among the many British legal concepts introduced in to the American colonies between 1640 and 1776. State patents were granted in most of the original thirteen colonies, beginning with a Massachusetts patent in 1641.<sup>13</sup> Even after the Revolution, during the Articles of Confederation, the new states continued to issue patents.

Perhaps inevitably, however, conflicts began to arise between the states -- most notably over steamboat patents, which were issued to two different inventors during this period. This led to a great deal of confusion over who was actually the inventor of the steamboat, which created an obstacle to the successful operation of interstate steam lines.<sup>14</sup> With this problem (among others) in mind, the Constitutional Convention of 1789 resolved to create a national patent system, rooted in the Constitution itself.<sup>15</sup> Thus the famous provision of Article I, Section 8, authorizing Congress to reward exclusive rights for a limited time to authors and inventors "for their respective writings and discoveries." One historical footnote is worth mentioning in this connection: an early draft of this provision, set out in James Madison's notes to the Convention, called for both exclusive rights and outright subsidies for new inventions. But, reflecting the otherwise somewhat "minimalist" view of government involvement in the economy reflected in the Constitution, this was rejected in favor of exclusive rights only. In any event the first U.S. patent statute was passed in May, 1790, the very early days of the first Congress (reflecting the importance of this matter), and the first patent was issued shortly thereafter -- to Samuel Hopkins of Pittsford, Vermont, for a process for making potash from wood ashes.<sup>16</sup>

The story of Thomas Jefferson's involvement in the early national patent system has often been told; he was the author of the Constitutional provision referred to, as well as a significant contributor to the original statute. But while the patent system got on its feet under Jefferson, it did not grow to its full stature until the 1836 revision, when a formal system of

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<sup>13</sup> See V. Clark, *History of Manufactures in the United States*, I: 1607-1860 (1929), at 50.

<sup>14</sup> See J. Flexner, *Inventors in Action: The Story of the Steamboat* 133, 172, 175 (1962).

<sup>15</sup> The expressly national patent law was one of several national solutions to interstate conflicts envisioned by the Constitution, most famously the Commerce Clause. For a description of the economic dislocations caused by interstate rivalries prior to the Constitution, see R. Morris, *The Forging of the Union 1781-1789* (1987), at 148-152.

<sup>16</sup> Paynter, The First US Patent, *Am. Heritage of Invention and Tech.*, Fall 1990, at 18.



examination, with professional examiners, was substituted for the pro forma registration system of the 1793 Act, a system which had itself been substituted for the original (1790) procedure involving three high-level government officials (including Jefferson as Secretary of State).

Since 1836 the patent system has grown dramatically by any standard -- number of patents issued, number of cases litigated, number of significant inventions patented, etc. And although academic observers occasionally question the overall benefits of the system, it is a fixture of American economic life, and even of folklore. Although the economic arguments are fascinating, it is beyond the scope of this essay to explore them. Yet one might heed the words of a stimulating commentator, who emphasizes that the net economic gain of the system might not be the only important issue:<sup>17</sup>

The significance of patents is not that they offer strong and indisputable incentives for invention. The most that can be said is that at some times and under certain circumstances patents have probably been beneficial in promoting economic growth and inventiveness. In fact, the effectiveness of the patent system is less important than the fact that every industrialized country in the West has made patenting a national institution, complete with supporting bureaucracy, legislation, and state funding. When combined with the zealous pursuit of patents by industry, the existence of professional careers in patent law practice, the transformation of the patent in Communist countries, the popular enthusiasm for the idea of the patent, and the economist's and historian's interest in probing the meaning of patents, the result is an obsession with technological novelty that is without precedent. No other cultures have been as preoccupied with the cultivation, production, diffusion, and legal control of new machines, tools, devices and processes as Western culture has been since the eighteenth century.

Perhaps in the end it is this "obsession with technological novelty" that makes the patent system a valuable social institution. Even if, as I believe, there are compelling economic reasons to have patents, this is an additional and by no means insignificant explanation for the practice of granting patents.

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<sup>17</sup> George Basalla, *The Evolution of Technology* 124 (Cambridge Univ. Press 1988).