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Innovation and Competition Policy: Cases and Materials (2nd ed.): Chapter 1: Competition Policy and the Scope of Intellectual Property Protection

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INNOVATION AND COMPETITION POLICY, Chapter 1
(2d ed.)
COMPETITION POLICY AND THE SCOPE OF
INTELLECTUAL PROPERTY PROTECTION

Herbert Hovenkamp

This book of CASES AND MATERIALS ON INNOVATION AND COMPETITION POLICY is intended for educational use. The book is free for all to use subject to an open source license agreement. It differs from IP/antitrust casebooks in that it considers numerous sources of competition policy in addition to antitrust, including those that emanate from the intellectual property laws themselves, and also related issues such as the relationship between market structure and innovation, the competitive consequences of regulatory rules governing technology competition such as net neutrality and interconnection, misuse, the first sale doctrine, and the Digital Millennium Copyright Act (DMCA). Chapters will be updated frequently. The author uses this casebook for a three-unit class in *Innovation and Competition Policy* taught at the University of Iowa College of Law and available to first year law students as an elective. The table of contents is as follows (click on chapter title to retrieve it):

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**INNOVATION AND COMPETITION POLICY:
CASES AND MATERIALS
HERBERT HOVENKAMP
CHAPTER 1 (2d ed.)
COMPETITION POLICY AND THE SCOPE OF
INTELLECTUAL PROPERTY PROTECTION**

**WRIGHT CO. V. HERRING-CURTISS CO.
204 F. 597 (W.D.N.Y. 1913)**

HAZEL, District Judge.

This bill in equity relates to the infringement of United States letters patent granted May 22, 1906, to Orville and Wilbur Wright on application for patent filed March 23, 1903, for improvements in flying machines, or, in other words, for a structure commonly known as an aeroplane. At this date, owing to articles in daily papers and periodicals with regard to notable flights in this country and abroad by the late Wilbur Wright, Orville Wright, defendant Glenn H. Curtiss, and other venturesome aviators, the aeroplane and the modus operandi thereof are reasonably familiar to the intelligent public. That such structures are supported in their flight by the reaction of the air against an inclined surface, and that the advancing air presses against the plane surfaces, thereby inclining them to rise, while at the same time a resistance to forward motion is encountered, which is overcome by the propelling motor, are facts now reasonably familiar to us.

By those who early studied the art the fundamental physical principles involved in the flight of a plane heavier than air, when advancing against the wind or currents of air, were well recognized. That a plane descending in response to the force of gravity naturally inclined in a forward direction, and that the air resisted its forward descent in proportion to the exposed surface of the plane, were matters thoroughly understood by those who were interested in the subject. This knowledge eventuated in the structures for aerial flying shown in the exhibit publications and in the Wright patent in suit. The objects of the latter, according to the specification, are:

‘To provide means for maintaining or restoring the equilibrium or lateral balance of the apparatus, to provide means for guiding the machine both vertically and horizontally, and to provide a structure combining lightness, strength, convenience of construction, and certain other advantages which will hereinafter appear.’

There are 18 claims in the patent; but claims 3, 7, 14, and 15 only are infringed, and they read as follows:

‘3. In a flying machine, a normally flat aeroplane having lateral marginal portions capable of movement to different positions above or below the normal plane of the body of the aeroplane, such movement being about an axis transverse to the line of flight,

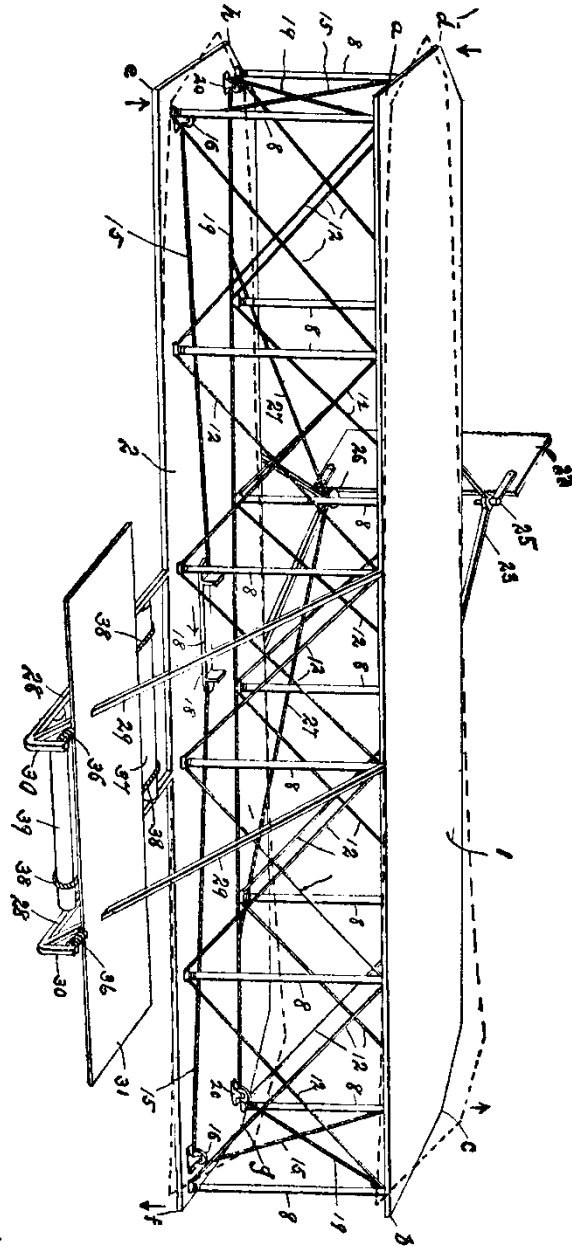
whereby said lateral marginal portions may be moved to different angles relatively to the normal plane of the body of the aeroplane, and also to different angles relatively to each other, so as to present to the atmosphere different angles of incidence, and means for simultaneously imparting such movement to said lateral marginal portions, substantially as described.'

'7. In a flying machine, the combination with an aeroplane, and means for simultaneously moving the lateral portions thereof into different angular relations to the normal plane of the body of the aeroplane and to each other, so as to present to the atmosphere different angles of incidence, of a vertical rudder, and means whereby said rudder is caused to present to the wind that side thereof nearest the side of the aeroplane having the smaller angle of incidence and offering the least resistance to the atmosphere, substantially as described.'

'14. A flying machine comprising superposed connected aeroplanes, means for moving the opposite lateral portions of said aeroplane to different angles to the normal planes thereof, a vertical rudder, means for moving said vertical rudder toward that side of the machine presenting the smaller angle of incidence and the least resistance to the atmosphere, and a horizontal rudder provided with means for presenting its upper or under surface to the resistance of the atmosphere, substantially as described.

'15. A flying machine comprising superposed connected aeroplanes, means for moving the opposite lateral portions of said aeroplanes to different angles to the normal planes thereof, a vertical rudder, means for moving said vertical rudder toward that side of the machine presenting the smaller angle of incidence and the least resistance to the atmosphere, and a horizontal rudder provided with means for presenting its upper or under surface to the resistance of the atmosphere, said vertical rudder being located at the rear of the machine and said horizontal rudder at the front of the machine, substantially as described.'

The following is a perspective view of the Wright machine:



The defenses are: (1) That the patent is not entitled to a broad construction; (2) that, if it is broadly construed, it is invalid in view of the prior art; (3) that, if properly construed as to its scope, the defendants do not infringe; and (4) that in any event defendants' mode of flying is on a different principle from complainant's.

The record is replete with publications and oral testimony showing that

the principal obstacle to the use of the aeroplane before the invention in suit was the inability to maintain lateral balance, due to disturbing aerial forces which swerved the aeroplane from its intended course. Indeed, this was the perplexing problem upon which human flight depended and the one with which the patentees had to cope. ...

Much, indeed, prior to the Wright patent, had been written on the subject of aerial machinery by Prof. Langley, of the Smithsonian Institute, Octave Chanute, and others, and there were a number of patents in this country and in foreign countries disclosing diligent and painstaking efforts by inventors to achieve success in aerial navigation with heavier than air machines; but all such efforts for one reason or another were abortive, and the intentions of the inventors and experimenters miscarried. The prior art taught that Langley, Lilienthal, Chanute, Maxim, and others had faithfully endeavored to solve the difficulties and remedy the imperfections in apparatus. Flying machines of various kinds had previously been built, but no one had flown save a few, Chanute in this country, and Lilienthal and Pilcher abroad, who were engaged in experimentation.

In this situation the patentees conceived the idea of hinging dihedral planes to supports at their front and rear margins, with flexible joints to permit warping or tilting them at their extreme lateral ends by the use of suitable levers to impart to the aeroplane surface a helicoidal twist. On this point the specification says:

‘We prefer this construction and mode of operation for the reason that it gives a gradually increasing angle to the body of each aeroplane from the central longitudinal line thereof outward to the margin, thus giving a continuous surface on each side of the machine, which has a gradually increasing or decreasing angle of incidence from the center of the machine to either side. We wish it to be understood, however, that our invention is not limited to this particular construction, since any construction whereby the angular relations of the lateral margins of the aeroplanes may be varied in opposite directions with respect to the normal planes of said aeroplanes comes within the scope of our invention.’

It was believed in the beginning that, by warping or depressing the margins of the supporting planes at opposite ends, the aeroplane could be controlled in its movements and its equilibrium maintained in flying, and the proofs show that in their earlier efforts the inventors did not design to use either a horizontal rudder in front of the machine or a vertical rudder at the rear; but later, before the application for patent was filed, these instrumentalities were added. The movable vertical rudder or tail exerts a

retarding influence on the side of the machine, which in flying has a tendency to move ahead of the opposite side, and thus assists the wings or marginal ends in keeping the aeroplane properly balanced....

To induce a construction of the claims in controversy that will exclude defendants' aeroplanes, it is contended that the patentees merely improved the known gliding machine—a contrivance for gliding down slopes—and that the wing tips, horizontal rudder, and vertical rudder were old separately and in combination. In the year 1896, and previously, Lilienthal had flown experimentally with a gliding machine which was afterwards wrecked. Later, the Pilcher and Chanute structures, of both the monoplane and biplane type, were used for experimental flying; but they also were failures, and little success was achieved in correcting their imperfections.

In a published address by Chanute, who had carefully studied the subject of aero-dynamics and disclosed a keen familiarity with flying machines of the aeroplane type, there is contained a precursory review of the aeroplane and its practicability up to the year 1897. In this address he points out the differences between curved and flat planes with regard to the effect of air pressure thereon; but his descriptions were not sufficiently definite to suggest the later improvements by the patentees. He declared that the use of a horse power motor to facilitate flight, if of sufficiently light weight, was a minor detail and not a serious problem, and that the maintenance of the equilibrium was the most important problem in connection with aerial navigation. While his experimentation and publications were helpful to the patentees, it is not contended by the defendants that they were anticipatory of the claims in suit, but merely that they showed the progress that had been made in efforts to make possible human flight.

That the prior patents do not show the patented combination of complainant's construction is evident from an examination thereof.

The Henson British patent of 1842 was for a monoplane having two pivoted tails independently operated- one a horizontal tail, controlling the upward and downward movements of the apparatus; the other a vertical tail, guiding its direction. The statement in the specification as to the dimensions of the machine indicates its impracticability, and there is nothing to show that the patentee had in mind the principle that the steering or control of the machine depended upon the tilt of the wings in connection with the use of the vertical rudder.

In the Maxim British patent, No. 16,883, of 1889, for an aerial machine, there is a vertical movable rudder and a horizontal rudder- the former for guiding the aeroplane in an upward or downward direction, and the latter for steering to right or left. While the function of the Maxim horizontal rudder was apparently the same as that of the Wright horizontal rudder, the function of the vertical rudder was essentially different.

In the Lanchester British patent, No. 3,608, the intention of the patentee was to secure the lateral balance of his aerial machine by automatic means. He, however, never succeeded in carrying out his design. In addition to the horizontal rudder, his machine carried a rear rudder, which was used for steering, and not for maintaining the equilibrium of the contrivance, and the wings were immovable....

One additional publication, the Ader article, published in France in 1893, may be dwelt upon. The conception of Ader relates to apparatus for flying which somewhat resembles the wings of birds or bats, having tips which, according to the specification, could be moved forward and backward. The machine was of the monoplane type, and carried a motor; but, as there was no connection between the warping features and the rudder by which the lateral balance of the machine was secured, the publication is not entitled to be considered in limitation of the claims in suit embodying such elements.....

... As the defendants have not proven that the defects attributable to such devices could have been removed by the exercise of the skill and training of an engineer or mechanic, I am of opinion, after complete consideration of the testimony on both sides, that the patentees, by their method of securing the equilibrium of the planes, made an important advance in an embryonic art. They were not the first to conceive the idea of using monoplane or biplane surfaces for flying, nor the first to support two planes at their margins one above the other, or to use vertical tails or rudders for steering, or to place horizontal rudders forward of the machine to guide it upward or downward in its flight. The prior separate use of such elements is freely admitted by the patentees; but they assert, rightly, I think, that the patented combination was a new combination, performing a new and novel result. The antecedent patents, the efforts to perfect the gliding machine and to provide means for restoring equilibrium, in short, the many unsuccessful attempts to remedy existing imperfections in aerial machinery, all bear witness to the fact that the achievement of the patentees required the exercise of the inventive faculty. Having attained success where others failed, they may rightly be considered pioneer inventors in the aeroplane art. Their concept was practical, and their combination of old and new elements meritoriously advanced the operativeness of aeroplanes of this type from which astonishing flights have resulted.

Of course, it is not intended to decide, and such decision should not be inferred from what has been stated, that by the adaptation described in the specification and claims in suit the capsizing or upsetting of the aeroplane has been made impossible or its stability in the air positively assured; for this is not contended. But that the invention is a strong factor in restoring equilibrium where, owing to the fluctuations of the wind or to other disturbing causes, the aeroplane is shifted or swerved from its course, is undoubtedly proven. When such deflections occur, the warping device,

imparting to the aeroplane surface a helicoidal twist, is used, and at the same time the vertical rudder is turned to recover the equilibrium. And even if the patentees were not strictly pioneers, in the sense of producing an apparatus novel in its entirety, they nevertheless strikingly surpassed their predecessors in devising means for restoring lateral balance, and are entitled to a liberal construction of their claims in controversy, and to the application of a range of equivalents that will include an aeroplane appropriating substantially the same instrumentalities and the same principle of operation.

The defendants urge that the patentees' invention is without practical utility, that the flat planes described in the specification were never used, that the vertical rudder is useful merely to equalize resistance, that the patent fails to disclose the manner of effecting the equalization of the differences of air pressure, and argue that in turning complainant's machine the ailerons are warped, with the result that the aeroplane swings or circles toward the side on which the greater angle of incidence was produced, that by such maneuvering to prevent upsetting complainant's machine has to be turned from its course, it being impossible to further turn the vertical rudder, and they argue that defendants' aeroplane is radically different from complainant's. They also claim that it was not until the vertical rudder was constructed to move independently of the ailerons, as in defendants' aeroplane, that an operative device was produced....

To the aeroplanes later constructed by the complainant there has been added a supplemental lever for turning the vertical rudder, which, as shown by the evidence, is used to increase the swing of the machine in one direction or another, when the conditions are such as to necessitate turning the rudder further to the right or left to retard the speed of the right or left wings than can be done by using the cradle. This alteration or additional feature was not necessary to the practicability or operativeness of the invention; such rudder still being relied upon in connection with the warping instrumentality.....

There was much discussion at the bar as to claim 3, which does not include the vertical rudder as an element. The important feature thereof is that the lateral marginal portions of the planes must be capable of movement to different angles relatively to the normal plane of the aeroplane and about an axis transverse to the line of flight; the purpose of said movements being to present to the atmosphere different angles of incidence. It was argued that without the co-operation of the vertical rudder the claim was wholly impracticable. The complainant company, to the contrary, rejoins that there is shown a subcombination which is valid, and which should be sustained. There is evidence that the marginal ends of the supporting planes are capable of moving simultaneously in different angular relations to the plane and to each other without the assistance of the vertical rudder; but the result was not satisfactory as the machine in its flights skidded to the side, an imperfection which has been remedied by the use of

the vertical rudder in conjunction with the ailerons. It is not essential to the validity of claim 3 that all parts of the machine, or all parts specified in other claims, which are necessary to its operativeness, should be included therein, and resort must be had to the specification for a disclosure of the parts necessary to insure the practicability of a patented device. In the Wright structure a new and novel result was attained simply by having the ailerons on the ends of the planes, without the supplemental feature of the vertical rudder. The warping feature is, in fact, the essential part of the machine, while the vertical rudder, insuring successful flying, is a valuable adjunct, without which lateral balance could not be restored. The employment, in a changed form, of the warping feature of its equivalent by another, even though better effects or results are obtained, does not avoid infringement. In such circumstances, as I read the authorities, the claim is valid as a subcombination..... In *Railroad Co. v. Dubois*, 12 Wall. 47, the Supreme Court of the United States says:

‘Undoubtedly a patentee may claim and obtain a patent for an entire combination, or process, and also for such parts of the combination or process as are new and useful, and he may claim and obtain a patent for both.’.....

It is next contended that defendants’ aeroplane does not infringe claim 3, as its ailerons do not move in either direction above or below the normal plane of the body portion; but any such alteration, however, is immaterial, as defendants’ planes move at different angles relative to the aeroplane and to each other, and attain the substantial result of the Wright patent.

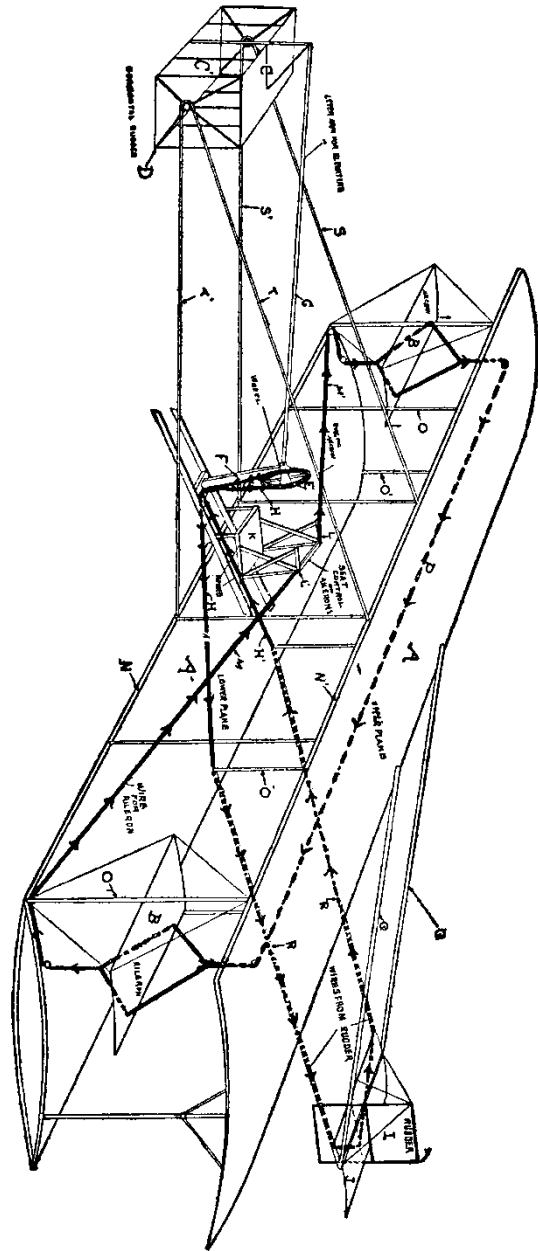
Claim 7 is for the elements of (1) an aeroplane; (2) means for moving the ailerons in different directions; (3) a vertical rudder; and (4) means for operating the rudder causing it to ‘present to the wind that side thereof nearest the side of the aeroplane having the smaller angle of incidence, and offering the least resistance to the atmosphere, substantially as described.’ The description of the modus operandi of the rear rudder plainly discloses its object and purpose, and is not restricted to the warping ropes or wires. Claim 14 includes the horizontal rudder, with means for presenting its underside to the resistance of the air currents, while claim 15 specifies the location on the aeroplane of the vertical and horizontal rudders. The said claims must be given an interpretation of sufficiently wide scope to cover the appropriation of the substance of the invention or the equivalent means by which the principle is applied to an aeroplane of the type described in the patent in suit.

This brings me to the final question of whether or not there is in defendants’ machine a tendency to spin or swerve, which is checked or counteracted by the operation of its vertical rudder. Upon this phase of the case considerable oral testimony was given bearing upon the practical and theoretical sides. Notwithstanding the construction to which the claims are thought entitled, if the defendants operated their aeroplane upon a different

principle, using means which were old in aerial navigation or foreign to complainant's, then infringement cannot be sustained.

The evidence is that the defendants in their machine have two slightly curved planes supported by rigid posts placed vertically to the planes at the front and rear sides, the ends thereof being open the entire length, and that there are two ailerons or wings on the extreme sides of the planes, each pivoted to supports and crosspieces midway between the upper and lower planes. Such ailerons or supplementary planes are extended in part beyond the edges of the main planes, and are not continuous or integral portions thereof, as are complainant's. They are adjustable at different angles, and are raised and lowered by the lateral movement of the body of the aviator, who is seated in a movable seat in the central portion of the aeroplane. Each aileron has the same angle to the supporting props as the other, and as the angles of incidence of the planes change in flying the angles of the ailerons also change, each presenting unequal angles and resistances. In consequence of such variation in the angles of the ailerons, the speed of the high and low sides varies whenever the planes are tilted from the normal angle. At the rear of defendants' construction there is a vertical rudder, and there is a sharp question of fact as to whether such rudder is used to assist the ailerons in recovering lateral balance by retarding the speed of the high side and increasing the speed of the opposite side. If it is not so used, then in my opinion the defendants' machine is not operated on the principle of claims 7, 14, and 15 in suit. The claim is that such rudder is operated in a manner to compensate for the difference in head resistance on the ailerons, due to the unequal angles caused by the continuous alteration of the angle of incidence of the machine, or, in other words, that the defendants' rudder is turned to the high side because of the unequal resistance exerted by the ailerons. This mode of operation the defendants earnestly deny, and there is much dispute in regard thereto.

In front of their machine the defendants also use a horizontal rudder, which directs the upward and downward course, and which may be maneuvered by the aviator to coact with the ailerons and the vertical rudder. The following is a perspective view of defendants' machine:



If I am correct in my interpretation of claim 3 and the rule of law applicable thereto, the ailerons of defendants' construction and the manner of using them are within its scope. The witness Curtiss frankly testified that

the purpose thereof is to preserve the lateral balance 'without the use of any other element or part'; it making no difference whether the aeroplane is in a straight or curved flight. Such concession supports the asserted infringement of the claim under consideration. There is, however, other testimony showing the specific manner in which the result is attained. The witnesses for complainant have sworn that in defendants' construction the aviator to restore lateral balance causes the ailerons to be lowered or raised, thus increasing the angle of incidence of one while decreasing that of the other, by inclining his body and moving his seat towards the high wing. It is true that the vertical rudder is not connected so as to coact with the ailerons, there being no direct connection between them, but each is controlled separately. According to the evidence, a turning effect is at times produced in defendants' machine by air disturbances, to counteract which the right aileron of defendants' machine may be pulled downward as the other is raised, and the vertical rudder inclined towards the raised aileron. Defendants firmly deny that there is any turning tendency or swerving which requires turning the rudder away from its central position; and, giving effect to the language of the Circuit Court of Appeals in its opinion on the appeal to be relieved from the preliminary injunction, upon this point really hangs the question of infringement.

Curtiss testified that he had given particular attention in flying to the ailerons of his machine, to acquaint himself with their movements, and to find out whether they caused a swerving of the machine on its vertical axis, which in its correction necessitated the use of the rear rudder, and he swears that the rear rudder is not used to assist the ailerons in their functions or to restore equilibrium, but merely for steering. The witness Willard, who has many times flown a Curtiss aeroplane, swears that in recovering balance there is no swerving or turning on the vertical axis, and that in effecting such maneuver the vertical rudder is held in a central position, and that he has never noticed any tendency of the machine to swerve because of the use of the ailerons, and in support of his testimony he cited an instance of the breakage of the controlling wires leading to the vertical rudder, and said that he flew ahead for a distance of two miles without its use; but as an equalizing device was used, and as the ailerons in the machine used were differently placed than midway between the planes, the incident loses importance. Captain Beck of the government aviation station, who has flown the defendants' aeroplane, substantially testified that there were no deviations of the aeroplane from its course, owing to the use of the ailerons, that the vertical rudder was not used to counteract any turning or swerving due to their use, and that he had never made such use of the vertical rudder; but he admitted that on one occasion in climbing he tilted abnormally, and turned his rear rudder in the opposite direction to restore balance, and succeeded in doing so. Lieut. Ellyson, of the United States Navy, also testified that he noticed no swerving when flying, and that the vertical rudder in the Curtiss aeroplane is usually used in starting from the ground, but not in flying, except for steering purposes. The witness Post testified that from his observations in experimental tests he could testify positively

that there is no turning of the machine around a vertical axis when the balancing planes are used, and that the rudder is used solely for steering....

The defendants are believed to have appropriated the substance of claim 7, and to have infringed claim 14, inasmuch as, in addition to the essential elements of the Wright patent and the object with which such elements are used, they also employ in their aeroplane, as hereinbefore shown, a horizontal rudder for 'presenting its upper and under surfaces to the resistance of the atmosphere.' Claim 15 contains the essential elements, and specifies the location of a vertical rudder at the rear of the machine and a horizontal rudder at the front thereof.

The defendants have embodied in their aeroplane the various elements of the claims in suit. While it is true, as pointed out herein, that the defendants have constructed their machine somewhat differently from complainant's, and do not at all times and on all occasions operate the same on the Wright principle, yet the changes they have made in their construction relate to the form only. They have constructed their machine so that it is capable of restoring equilibrium in substantially the same way as is complainant's machine, and the evidence is that on occasions, depending upon aerial conditions or other disturbing causes, they use the vertical rudder, not only to steer their machine, but to assist the ailerons in restoring balance.

It is unnecessary to further answer the arguments advanced at the bar bearing on the defense of noninfringement, as to do so would extend this opinion beyond reasonable length. Everything relating to the testimony and the criticisms thereon has not been fully treated, yet the material features have been sufficiently elaborated. The questions of law in the case are important; but the questions of fact are controlling, and in view of the novelty of the claims and their scope, the question of infringement is resolved adversely to the defendants as to the claims which are the subject of this controversy.

A decree may be entered, with costs, in favor of the Wright Company, as prayed in the bill; but, because of the importance of the litigation and of the questions involved, a supersedeas will be allowed, upon condition that an appeal be diligently prosecuted.

NOTES AND QUESTIONS

1. Patent scope presents a problem of competition policy as much as intellectual property policy, does it not? The markets for most manufactured products are differentiated but nevertheless at least moderately competitive. This includes automobiles, computers, televisions and other consumer electronics, and kitchen appliances, to name a few. The granting of very broad patent rights can permit a pioneer patentee to exclude

variations that build in some way on the pioneer's patent. Further, under the doctrine of equivalents, patent law can even exclude alternative technologies that accomplish the same purpose. The result is less competition – something that might be fully justified if it produces more innovation. But isn't that the rub: it seems fairly clear that broad patent grants reduce competition by permitting pioneers to exclude rival technologies; whether broader scope produces more innovation is very much an open question.

2. See Robert P. Merges & Richard R. Nelson, *On The Complex Economics of Patent Scope*, 90 COL.L.REV. 839, 890-891 (1990), speaking of the Wright patent litigation:

The achievement described in the patent -- an efficient stabilizing and steering system--was in fact a major one, and it did enable a multiplicity of future flying machines. .. [T]he Wright brothers were very interested in producing aircraft and in improving their design, and they did so actively. However, there were other important people and companies who wanted to enter the aircraft design and manufacture business. They had their own ideas about how to advance the design of aircraft, and they strongly resisted being blocked by the Wright patent. In this case, and others, it turned out to be extremely difficult to work out a license agreement that satisfied both the holder of a broad patent and an aggressive potential competitor who believed that there was a lot of his own work in his design. The early attempts by the Wright Brothers and Glenn Curtiss, who was the most prominent such potential competitor, came to naught. Litigation followed.

There is good reason to believe that the Wright patent significantly held back the pace of aircraft development in the United States by absorbing the energies and diverting the efforts of people like Curtiss. The aircraft case is similar to that of automobiles in that the problems caused by the initial pioneer patent were compounded as improvements and complementary patents, owned by different companies, came into existence. The situation was so serious that at the insistence of the Secretary of the Navy, during World War I, an arrangement was worked out to enable automatic cross licensing. This arrangement, like the licensing of automobile patents, turned out to be a durable institution. By the end of World War I there were so many patents on different aircraft features that a company had to negotiate a large number of licenses to produce a state-of-the-art plane.

See also Mfrs. Aircraft Ass'n v. United States, 77 Ct. Cl. 481, 485 (1933), which observed that the existence of a chaotic situation concerning the validity and ownership of important aeronautical patents seriously

retarded the development of the aircraft industry in the United States and that that it was difficult for the Government to obtain fulfillment of orders because some companies would not expend any money on their plants for fear that suits brought against them would force them out of business. *Manufacturers Aircraft Ass'n v. United States*, 77 Ct.Cl. 481, 483-84 (Ct. Cl. May 8, 1933). A National Advisory Committee for Aeronautics, which had been created pursuant to an act of Congress to consider and devise some plan to remedy the existing difficulties, rendered a report recommending the formation of the Aircraft Manufacturers Association among all aircraft manufacturers and suggesting the details of a cross-license agreement among its members. *Id.* at 484-85. After discussing the terms with the airplane manufacturers and representatives of the Wright and Curtiss Companies, the National Advisory Committee approved the report and the proposed cross-license agreement.

George Bittlingmayer has argued that royalty-free cross-licensing or royalty-free pooling of competing patents in the aircraft patent pool eliminated the possibility that the agreement was a front for a cartel, assuming there were no restrictions on the prices or output of the final product and the agreement saved the accompanying costs and the uncertainty of litigating competing patents. Bittlingmayer, *Property Rights, Progress, and the Aircraft Patent Agreement*, 31 *J.L. & Econ.* 227, 229, 232, 236 (1988). First, such an agreement would not protect the firms from competition because its terms show that that only a limited set of patents was covered, so the firms were free to compete for customer in other ways.. They could use price competition as well as nonprice competition in nonpatentable aspects of aircraft design and construction. Second, the firms sharing patents without royalties expect to gain more from unrestricted use of other firms' patents than they lose by not being able to charge for their own. Third, two exclusions from royalty-free sharing existed in the agreement: patents of "striking character" received arbitrated royalties, and patents not pertaining to aircrafts structures were excluded altogether. The arbitrated royalties would induce the firms who believed the expected value of their current or future patent is so great to stay in the agreement. The exclusion of all but aircraft-structure patents from the agreement eliminated the holdout problems that arise when the different patents crucial to an innovation are held by different firms.

3. In an important article on sequential innovation Professor Ed Kitch argued that the patent system "puts the patent owner in a position to coordinate the search for technological and market enhancement of the patent's value," "lowers the cost for the owner of technological information of contracting with other firms possessing complementary information and resources," and "reduc[es] the amount of duplicative investment in innovation." However, achieving this normally requires that broad rights be granted to pioneer patentees. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 *J.L. & Econ.* 265 (1977). Kitch analogized the patent to the right to "prospect" that the discoverer of a

mineral vein such as gold could receive from the government. The gold had not yet been mined, but the discovery and the staking of a claim entitled the prospector to an exclusive right in what he had discovered.

Professor John Duffy responded that the patent system is more analogous to bidding for a natural monopoly, such as a public utility franchise. The patent is awarded to one of the inventors who agree to start racing earliest and thus implicitly consent to place the invention in the public domain first. John F. Duffy, *Rethinking the Prospect Theory of Patents*, 71 U. CHI. L. REV. 439, 444 (2004). Duffy quoted Joseph A. Schumpeter:

It is hardly necessary to point out that competition of the kind we now have in mind acts not only when in being but also when it is merely an ever-present threat. It disciplines before it attacks. The businessman feels himself to be in a competitive situation even if he is alone in his field.

JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 85 (1942).

Further, competition to obtain patentable improvements to maintain the monopoly position granted by the pioneer patent can help constrain the monopolist and increase social welfare. Other inventors may try to invent around the prospect patent rather than compete with the prospect patent holder for patentable improvements.

FESTO CORP. V. SHOKETSU KINZOKU KOGYO KABUSHIKI CO.

234 F.3d 558 (Fed. Cir. 2000), rev'd, 535 U.S. 722 (2002)

[The Supreme Court reversed the Federal Circuit in this decision involving the proper scope of a patented invention. What appears here is (1) the Reporter's syllabus describing the facts and the Supreme Court's decision; and (2) a dissenting opinion from the Federal Circuit below, written by Judge Pauline Newman—Ed.]

Syllabus of Supreme Court Reporter

Petitioner Festo Corporation owns two patents for an industrial device. When the patent examiner rejected the initial application for the first patent because of defects in description, 35 U.S.C. § 112, the application was amended to add the new limitations that the device would contain a pair of one-way sealing rings and that its outer sleeve would be made of a magnetizable material.... After Festo began selling its device, respondents (hereinafter SMC) entered the market with a similar device that uses one two-way sealing ring and a nonmagnetizable sleeve. Festo filed suit, claiming that SMC's device is so similar that it infringes Festo's patents

under the doctrine of equivalents....

Held:

a) To enable a patent holder to know what he owns, and the public to know what he does not, the inventor must describe his work in “full, clear, concise, and exact terms.” § 112. However, patent claim language may not describe with complete precision the range of an invention’s novelty. If patents were always interpreted by their literal terms, their value would be greatly diminished. Insubstantial substitutes for certain elements could defeat the patent, and its value to inventors could be destroyed by simple acts of copying. Thus, a patent’s scope is not limited to its literal terms, but embraces all equivalents to the claims described. See *Winans v. Denmead*, 56 U.S. (15 How.) 330, 347, 14 L.Ed. 717. Nevertheless, because it may be difficult to determine what is, or is not, an equivalent, competitors may be deterred from engaging in legitimate manufactures outside the patent’s limits, or lulled into developing competing products that the patent secures, thereby prompting wasteful litigation. Each time the Court has considered the doctrine of equivalents, it has acknowledged this uncertainty as the price of ensuring the appropriate incentives for innovation, and it has affirmed the doctrine over dissents that urged a more certain rule.

(b) Prosecution history estoppel requires that patent claims be interpreted in light of the proceedings before the Patent and Trademark Office (PTO). When the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection, he may not argue that the surrendered territory comprised an unforeseen equivalent.....

(c) Prosecution history estoppel is not limited to amendments intended to narrow the patented invention’s subject matter, *e.g.*, to avoid prior art, but may apply to a narrowing amendment made to satisfy any Patent Act requirement....

(d) Prosecution history estoppel does not bar the inventor from asserting infringement against every equivalent to the narrowed element. Though estoppel can bar challenges to a wide range of equivalents, its reach requires an examination of the subject matter surrendered by the narrowing amendment.... By amending the application, the inventor is deemed to concede that the patent does not extend as far as the original claim, not that the amended claim is so perfect in its description that no one could devise an equivalent.... [I]n cases in which the amendment cannot reasonably be viewed as surrendering a particular equivalent—*e.g.*, where the equivalent was unforeseeable at the time of the application or the rationale underlying the amendment bears but a tangential relation to the equivalent—the patentee can rebut the presumption that prosecution history estoppel bars a finding of equivalence by showing that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim

that would have literally encompassed the alleged equivalent.

* * *

Judge Pauline Newman, dissenting from lower court's decision, 234 F.3d 558, 638 et seq.:

III INNOVATION AND COMPETITION POLICY

... The modern industrial economy is driven by technological innovation. It has long been understood that technological advance and industrial vigor flow from legal and economic policies that encourage invention and support investment in the products of invention. The extensive scholarship in this area is founded on the classical studies of Joseph A. Schumpeter, *Capitalism, Socialism and Democracy*, Harper, New York (3d ed.1950) (recognizing the economic impact of patent-based innovation as new industries and new goods displace the old), and has been broadly explored, e.g., Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention* (1962) (discussing intellectual property rights in a free enterprise economy); Robert Solow, *Technical Change and the Aggregate Production Function*, 39 Rev. Econ. & Stat. 312 (1957).

The encouragement of invention and investment in new ideas and their embodiments is a primary function of patent systems, aimed at the national purpose of development of new industries, improved productivity, increased employment, and overall economic growth as well as technologic advance. There is burgeoning modern scholarship directed to studies of invention, investment, and patent systems, generally building on the work of William D. Nordhaus, *Invention, Growth, and Welfare: A Theoretical Treatment of Technological Change*, M.I.T. Press, Cambridge (1969), and other scholars such as Kenneth M. Dam, *The Economic Underpinnings of Patent Law*, 23 J. Leg. Studies 247 (1994); David Silverstein, *Patents, Science and Innovation: Historical Linkages and Implications for Global Technological Competitiveness*, 17 Rutgers Computer & Tech. L. J. 261 (1991); and Friedrich-Karl Beier, *The Significance of the Patent System for Technical, Economic and Social Progress*, 11 Int'l Rev. Indus. Prop. & Copyright L. 563 (1980). Critical attention has been given to aspects such as the nature of the technology, the rate of technologic change in the particular field, the maturity of the field, the cost of invention and development for various technologies, market risks and competitive structures, the ease and cost of imitation, and the choice between disclosure in patents and maintaining the technology in secrecy. International patenting and trade aspects have been explored, as well as the cost of patenting and the cost of enforcement. E.g., Nancy T. Gallini, *Patent Policy and Costly Imitation*, 32 RAND J. Econ. 56 (1992) (discussing factors such as licensing policy and technological difficulties); Richard J. Gilbert & David M.G. Newberry, *Preemptive Patenting and the Persistence of*

Monopoly, 72 Am. Econ. Rev. 514, 519, 522 (1982) (industry-specific conditions such as the existence of patentable substitutes and cross-licensing, as well as costs of litigation, affect strategic behavior).

The field of innovation study has evolved to include such complexities as “sequential” innovation, wherein one invention follows from the disclosure of another, *e.g.*, Jerry R. Green and Suzanne Scotchmer, *On the Division of Profit in Sequential Innovation*, 26 RAND J. Econ. 20 (1995) (pointing out that patent length and breadth play a different role when innovation is sequential); G.M. Grossman and E. Helpman, *Quality Ladders in the Theory of Growth*, 58 Rev. Econ. Stud. 43 (1991) (discussing how investment in sequential innovation drives economic growth).

It is well recognized that all of these aspects have varying weights, and that the circumstances surrounding the development and utilization of intellectual property are extremely diverse. Indeed, commentators complain that a single patent policy and patent law are unsuited to the range of scientific and commercial activity in today’s economy.

Thus scholarship is providing rigor to understanding the role of intellectual property in innovation/competition policy, even as the limitations of economic models of invention, risk, and investment are recognized. Scholars writing in this field tend to introduce their analyses with a salute to complexity and an apology for their simplifications. However, within the growing body of scholarship, studies of the relationship between industrial innovation and optimal patent policy weigh against the majority’s policy decision here. A paper entitled *Optimal Patent Design and the Diffusion of Innovations*, Carmen Matutes, Pierre Regibeau & Katherine Rockett, 27 RAND J. Econ. 60, 78 (1996), concludes that “the optimal scope policy implies that inventors of basic innovations obtain protection on applications that they have not yet fully worked out. This would probably require a more lenient review of claims than is the current practice.” Edmund W. Kitch in *The Nature and Function of the Patent System*, 20 J.L. & Econ. 265 (1977) proposes that optimum patent policy should provide sufficiently broad scope to the inventor who opens a new field, to provide adequate economic incentives while avoiding duplication of effort and discouraging recourse to secrecy. D.G. McFetridge and M. Rafiquzzaman in *The Scope and Duration of the Patent Right and the Nature of Research Rivalry*, 8 Research in Law & Economics: The Economics of Patents and Copyrights 91, 104 (1986) discuss how the existence of non-infringing substitutes alters the benefit gained by an inventor, necessarily skewing incentives to invest.

It is generally agreed that long-term economic growth requires a policy framework that encourages the creation and commercialization of new technologies, as contrasted with a policy that facilitates appropriation of the creative product, lest the creative product dry up in the face of too-

easy appropriation. “Knowledge capital,” secured by intellectual property rights, now rivals the traditional economic components of labor productivity, capital formation, and natural resources, as the foundation of economic growth.

The inventor and the imitator are affected by quite different economic considerations. The innovator takes the risk of commercial success or failure of new things in new markets—the risk of unfulfilled expectations, obsolescence, regulation, technologic failure. The imitator bears none of these risks; he is interested only in the successful products, not in the failures; he is interested only in the profitable products, not the marginal ones; he moves in only after the invention has been made and tested and the market developed, and can operate at lower margins. The patent system provides weight on the side of the innovator, aided by the doctrine of equivalents and its inhibition of close copying, establishing an incentive whose value has been tested by time. However, it is also well recognized that competition is essential to a healthy economy. Achieving the optimum balance of these factors is of vital national importance. A major policy change in the foundational law affecting innovation and competition should not be made without adequate study of its consequences.

Although there is burgeoning literature on technologic intellectual property rights, the doctrine of equivalents has not, of itself, been a major focus of legal and economic scholarship. I suspect this is due to the complexity of the issue, the variety of factual applications, the diversity of technologies, the breadth of interacting influences on patentees’ and competitors’ activities, and the complex nuances of competition at the edge of the products of others. A few authors, however, have critically considered the doctrine of equivalents. For example, Robert P. Merges & Richard R. Nelson, in *On the Complex Economics of Claim Scope*, 90 Colum. L. Rev. 839 (1990), observe that the doctrine of equivalents tends to diminish incentives for competitors, but point out that the doctrine also encourages competitors to make “leapfrogging” advances instead of simply copying at the edge of the claims. The questions raised by the doctrine of equivalents are not quite the same as those of patent “scope.” The issue of “scope” is directed to aspects of literal claim breadth, as discussed by Kitch, *supra*. The question of equivalency is quite different. Infringement under the doctrine of equivalents is available only against what is indeed the same invention with only insubstantial change, as contrasted with issues of broad claims for broad but undeveloped concepts. Equivalency is a judge-made response to the pernicious literalism of the system of claiming, not an enlargement of the scope of the invention.

My colleagues in the majority make the error of the “simplified model,” which assumes a continuing supply of new products, and ignores the prior steps of invention and commercialization. The majority concludes that the elimination of liability for infringement based on equivalency will

be of public benefit: “The public will be free to improve on the patented technology and design around it. . . . [C]ertainty will stimulate investment in improvements and design-arounds.” Maj. op. at 577. However, the assumption that placing new technology in the public domain is always the optimum path to industrial growth is not supported by experience. Empirical studies have added rigor to the common sense knowledge that reduced profit opportunity affects the supply of capital to launch a new technology, and often the creation of the technology itself. *See, e.g.*, Joshua Lerner, *The Importance of Patent Scope: an Empirical Analysis*, 25 RAND J. of Econ. 319 (1994) (reviewing 173 venture-backed biotechnology firms and reported that an increase of one standard deviation in average patent scope produced a 21% increase in the firm’s value).

The present patent law has supported a blossoming of technology-based industry in a competitive environment that is conspicuous for its entrepreneurial vigor. The balance among inventor, investor, competitor, and consumer, and the effect of the doctrine of equivalents on that balance, is not explored in the parties’ briefs and had sparse *amicus* participation, for it was not at issue. Of course no patentee would choose to rely on the doctrine of equivalents to support commercial investment. The public and private interests served by the doctrine of equivalents derive from its deterrence of close imitation, thereby helping to assure to the patentee the benefit of the invention, while obliging would-be competitors to advance the technology instead of simply skirting the edge of the claims. Although its influence is not easy to quantify, it is generally accepted that the doctrine contributes to an industrial policy that seeks to support technologic innovation.

CONCLUSION

The policy underlying the doctrine of equivalents has been sustained by the absence of alternative remedy in meritorious cases, when the patentee’s invention has indeed been taken by trivial change from the letter of the claims. By enabling remedy when remedy is warranted, the doctrine adds strength to the system of patents. Today’s technological vitality arose on a patent system that included the doctrine of equivalents. A change in the balance between inventor and imitator requires careful understanding of the consequences; a preference for the neatness of precise “notice” does not justify major tinkering with the overall strength of the patent system, with unknown consequences. This court’s new recipe for risk-free copying of patented inventions presents policy considerations of national import.

The doctrine of equivalents has not been deemed superfluous as an instrument as justice, and not until today has it been deemed “unworkable” by this court. The Federal Circuit’s *sua sponte* change in this law is a change in industrial policy that requires public discussion in advance of, not

after, the law has been changed.¹ This court's initiative flows uncomfortably as a ruling that affects myriad vested rights, on a novel legal theory, without briefing or argument.

NOTES AND QUESTIONS

1. *Patent scope and market structure.* The Patent Act does not give a patentee the right to an economic monopoly, but only to exclude rivals from technology covered by the patent's claims. Market structure is both formally and practically irrelevant to questions about patent scope. Neither the text of the Patent Act nor its legislative history suggests that Congress paid much attention to the question of monopoly. However, broad vs. narrow scope can make a great deal of economic difference depending on the underlying competitiveness of the market at issue. Granting broad interpretation of a patent (for example, with a broad doctrine of equivalents, see *infra*) has little impact on market competitiveness if the patent itself is fairly minor and the underlying market highly competitive. For example, a broad interpretation of a patent on a self-winding watch may not have much impact on competition if (1) people do not place a particularly high value on self-winding; (2) there are very different technologies for achieving self-winding; or (3) wind-up watches are in intense competition with digital electronic watches. On the other hand, a broad interpretation of the Wright Brothers aeroplane patent turned competing designs with quite different technologies into infringers, thus creating considerable market power, which included the power to exclude competing, superior technologies. Should the antitrust concern with the exercise of power be relevant to questions about patent scope?

2. Patent law's doctrine of equivalents places limits on inventors' ability to 'invent around' patents by finding infringement for technologies that do not literally infringe a patent claim, but that (1) perform substantially the same function, (2) in substantially the same way, and (3) yield substantially the same result. See *Graver Tank & Mfr. Co. v. Linde*

¹ My colleagues' complaint about the frequency of issues of equivalency in litigation must be viewed in context. Less than a hundred patent cases are fully tried each year, and most of the few hundred appeals to the Federal Circuit reach us on summary disposition. Infringement cases often raise issues of equivalency, usually offered as an alternative theory to literal infringement. These are very small numbers in light of over 1,700,000 unexpired patents, of which 1,200,000 are maintained and in force. Cases in litigation do not provide courts with a balanced picture of the workings of commerce. Litigants rarely explore national policy, as committed parties battle for high stakes. Such cases do not present an objective exposition of the overriding national interest.

Air Prod. Co., 339 U.S. 605, 609 (1950):

What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Equivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect. In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents. Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. *An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.*

(emphasis added) Did the aileron-bearing plane with metal wings infringe the Wright Brothers fabric wing with wing warp under this statement of the doctrine? *See also* Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17 (1997), which affirmed the continued viability of the doctrine of equivalents under the 1952 Patent Act, but also noted these important qualifications:

We do, however, share the concern ... that the doctrine of equivalents ... has taken on a life of its own, unbounded by the patent claims. There can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement. Judge Nies identified one means of avoiding this conflict:

“[A] distinction can be drawn that is not too esoteric between substitution of an equivalent for a component *in* an invention and enlarging the metes and bounds of the invention *beyond* what is claimed.... Where a claim to an invention is expressed as a combination of elements, as here, ‘equivalents’ in the sobriquet ‘Doctrine of Equivalents’ refers to the equivalency of an *element* or *part* of the invention with one that is substituted in the accused product or process....

“This view that the accused device or process must be more than ‘equivalent’ *overall* reconciles the Supreme Court’s position on infringement by equivalents with its concurrent statements that ‘the courts have no right to enlarge a patent beyond the scope of its claims as allowed by the Patent Office.’

The ‘scope’ is not enlarged if courts do not go beyond the substitution of equivalent elements.”

Warner-Jeckinson, 62 F.3d at 1573-1574 (dissenting from Federal Circuit’s decision).

We concur with this apt reconciliation of our two lines of precedent. Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety.

3. *Sequential innovation.* Judge Newman noted the crucial role sequential innovation plays in economic growth. Innovation is sequential, or *cumulative*, when “new inventions rely on previous ones.” Oren Bar-Gill & Gideon Parchomovsky, *The Value of Giving Away Secrets*, 89 Va. L. Rev. 1857, 1867 (2003). Nearly all industries are characterized by sequential innovation, and sequential innovation is the “hallmark” of high-tech industries like software, semiconductors, and pharmaceuticals. Bar-Gill & Parchomovsky, *supra*, at 1867–68. See James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation*, 40 RAND J. Econ. 611 (2009) (arguing that the relatively weak patent protection found in certain cumulative-innovation industries is responsible for their rapid growth); Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1609–10 (2003) (noting that research on cumulative innovation shows that “patent rights are important, but that they should not confer unlimited power to exclude,” and arguing that the balance of rights between original inventors and subsequent improvers should depend “on the relative importance of the initial invention and the improvement”); Nancy T. Gallini, *The Economics of Patents: Lessons from Recent U.S. Patent Reforms*, 16 J. Econ. Persp. 131, 136 (2002) (arguing that while stronger patent rights “give the patent holder . . . the means to ‘hold up’ future innovations by threatening to litigate infringers, they also increase the possibility of the patent holder being held up by previous innovators” and noting “that [i]n this setting, the link between patent strength and innovation incentives is ambiguous”); J.H. Reichman, *Of Green Tulips and Legal Kudzu Repackaging Rights in Subpatentable Innovation*, 53 Vand. L. Rev. 1743 (2000) (arguing that patent law’s property-based rules impede sequential innovation and raise transaction costs); John H. Barton, *Patents And Antitrust: A Rethinking in Light of Patent Breadth and Sequential Innovation*, 65 Antitrust L.J. 449, 450, 459–60 (1997) (stating that antitrust law must balance “intellectual property incentives that encourage each generation of inventions and products against those that encourage later generations of inventions and products” and arguing that courts hearing antitrust cases could promote sequential innovation by finding that “refusal to license a very broad and fundamental patent” violates Section 2 of the

Sherman Act); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 Tex. L. Rev. 989 (1997) (discussing how patent and copyright laws distinguish between “minor improvers” and “major improvers”); Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 Colum. L. Rev. 839, 880 (1990) (describing a variety of industries that feature sequential innovation and arguing that patent scope should be narrower in these industries).

4. *Sequential innovation and amendments of patent claims.* In Tun-Jen Chiang, *Fixing Patent Boundaries*, 108 Mich. L. Rev. 523 (2010), Professor Chiang points out that patent claims are “supposed to ‘inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which are not.’” (quoting *Permut Co. v. Graver Corp.*, 284 U.S. 52, 60 (1931)). An amendment process that allows patent holders to broaden their claims after their patents are issued gives patent holders a windfall and makes it possible for them to shift losses to their competitors. This can cost subsequent improvers dearly, especially in dynamic industries characterized by sequential innovation. Professor Chiang argues that patent holders should not be allowed to amend claims once their patents are issued and that even pre-issuance amendments should not get “retroactive priority against third-party activity.” Even under Professor Chiang’s proposed changes, however, the doctrine of equivalents would still play a role in defining claims. *See id.* at 527 n.17 (doctrine of equivalents “operate[s] within the structures of the claim itself, retaining some boundary-defining role for claims even in this context”).

5. In *Lear v. Adkins*, 395 U.S. 653 (1969), the Supreme Court held that a licensee may challenge the validity of a patent which it had licensed, and if the licensee showed that the patent was invalid, it would not be required to pay further royalties. The Court reasoned that preventing the licensee from challenging the validity of the patent would “undermine the strong federal policy favoring the full and free use of ideas in the public domain.” *Id.* at 673. However, under *Lear*, the licensee would first need to repudiate the agreement before it could attack the validity of the patent. Nearly forty years later in *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118 (2007), the Supreme Court extended *Lear* by permitting a licensee to challenge the validity of a licensed patent under the Declaratory Judgment Act, thus making it unnecessary for the licensee to repudiate the agreement and risk contract penalties for breach. The patentee Genentech had given the licensee MedImmune a choice: pay royalties on an existing license to make a pharmaceutical drug or face an infringement suit. MedImmune then brought a declaratory judgment action against Genentech, claiming that the licensed patent was invalid and unenforceable and in any event did not cover the drug that MedImmune was making. The district court dismissed the suit because MedImmune had never stopped paying royalties under the licensing agreement. Under controlling Federal Circuit precedent, licensees were required to repudiate their licensing agreements before they could

establish Article III standing, which requires a “case or controversy” before a complainant can invoke the jurisdiction of the federal court. Before the Supreme Court, Genentech argued that MedImmune could not challenge the validity of the licensing agreement while still benefiting from it, and that *Lear v. Adkins* “did not suspend [this] rule for patent licensing agreements,” as *Lear* had repudiated the contract before it sued *Adkins*. The Court questioned whether *Lear*’s “repudiation of . . . licensee estoppel was so limited” but held that it did not matter. Licensees can establish Article III standing when “payment of a claim is demanded as of right and where payment is made, but where the involuntary or coercive nature of the exaction preserves the right to recover the sums paid or to challenge the legality of the claim.” Nothing in the Constitution requires patent licensees to “risk treble damages and the loss [most of their] business” before seeking declaratory judgment that the patent is invalid.

6. Should an innovator be able to obtain licensing royalties on an invention that was never patented to begin with? In *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257 (1979), Aronson had filed a patent application for an ingenious keyholder. Quick Point, a manufacturer agreed to make it and paid royalties for this exclusive privilege. The agreement also provided that the royalty rate would be reduced if the patent did not issue within five years, but did not contain a provision about what would happen if the patent never issued at all. The patent application was denied but the device itself was quite successful on the market and others began to copy it. After paying royalties for fourteen years Quick Point announced that it no longer had an obligation to pay them, given that the patent had been denied. The Supreme Court held that because no patent issued there was no federal question and the enforceability of the license agreement was to be governed entirely by state contract law. However, the Court suggested that the contract was probably enforceable given that the parties were bargaining at arms’ length and must have known that a patent might never issue. Weren’t the parties simply sharing a risk? Should manufacturers and patentee be required to wait three years – the average pendency of a patent application – before negotiating a manufacturing license?

**NOTE: THE RELATION BETWEEN MARKET STRUCTURE
AND INNOVATION: THE “INVERTED U”**

What is the relationship between market structure and innovation? Are highly concentrated markets—markets with fewer firms and thus further from perfect competition—actually more conducive to innovation than more atomistic markets? In one of the most influential arguments on the subject, Joseph Schumpeter argued that that monopolized markets are more conducive to innovation than highly competitive, atomistic markets. See JOSEPH SCHUMPETER, *CAPITALISM, SOCIALISM, AND DEMOCRACY* (3d ed. 1942). There are several reasons why more highly concentrated markets might better promote innovation: large firms face less competitive pressure,

which drives prices toward cost, and thus may have more funds to invest in innovation than smaller firms. Further,, it may be easier for firms in highly concentrated markets to obtain credit to invest in innovation from within the firm. Or a strong market position may cause a large firm to be less fearful of its smaller rivals. If innovations are easily copied by rival firms because of ineffective intellectual-property protection it may not be economically rational it for larger firms to invest in innovation. See Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST L.J. 575, 578 (2007).

In 1962, Kenneth Arrow argued that, contrary to Schumpeter's view, more competitive, less concentrated markets lead to a greater rate of innovation. See generally Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF ECONOMIC ACTIVITIES: ECONOMIC AND SOCIAL FACTORS 609 (Richard Nelson ed., 1962). Arrow argued that a monopolist has less to gain by innovating; if the monopolist spends a great deal of money researching and developing in order to innovate, it might see only a limited financial reward because it has already captured the entire market for the product. Because innovating would be unlikely to capture new sales, the monopolist would not be acting economically rationally by investing capital in research and development. A monopolist particularly does not have an incentive to innovate when "the post-invention monopoly price is less than the pre-innovation monopolist's costs." See Michael A. Carrier, *Two Puzzles Resolved: Of the Schumpeter-Arrow Stalemate and Pharmaceutical Innovation Markets*, 93 IOWA L. REV. 393, 404 (2008).

After decades of empirical research, many scholars have concluded that the relationship between market structure and innovation lies somewhere between the Schumpeter and Arrow positions, and that market concentration and the rate of innovation exist in an "inverted-U" relationship. When a market is too highly concentrated, monopolist firms do not innovate as much as when the market is slightly less concentrated. However, there comes a point when too many firms enter a market and the market starts to become too crowded and atomistic, and innovation tapers off. See CHRISTINA BOHANNAN & HERBERT HOVENKAMP, CREATION WITHOUT RESTRAINT: PROMOTING LIBERTY AND RIVALRY IN INNOVATION, ch. 1 (2012); Richard Gilbert, *Looking for Mr. Schumpeter: Where Are We in the Competition-Innovation Debate?*, in 6 INNOVATION POLICY AND THE ECONOMY 159, 180 (Adam B. Jaffe et al. eds., 2006). The inverted-U suggests that there is some optimal level—which differs depending on the market—where innovation happens most frequently, and that this optimal level falls somewhere between perfect competition and monopoly.

Much of the theory suggests that the inverted-U relationship results when firms are similarly aggressive in innovating and thus are in close competition with one another—so-called "neck-and-neck" markets. Innovation then becomes essential. See Philippe Aghion et. al., *Competition*

and Innovation: An Inverted-U Relationship, 120 Q. J. ECON. 701 (2005). Markets can essentially be split into neck-and-neck markets and markets that contain laggard firms. In neck-and-neck markets, firms typically do not earn very high pre-innovation profits as a result of the intensely competitive market. Because an opportunity exists to earn higher post-innovation profits relative to the low pre-innovation profits it currently earns if the firm were to innovate and escape competition, these types of firms will typically invest a great deal in innovation activity (typically measured either by research-and-development spending or by patenting activity). *Id.* at 702. On the other hand, in a laggard market increased product-market competition will negatively affect a firm's post-innovation profits. With lower post-innovation profits, firms are not as incentivized to innovate.

In creating these economic models, researchers have made various assumptions which are subject to attack. For example, Carl Shapiro argues that economists have incorrectly equated more competition with less product differentiation. While sometimes a high degree of competition comes about as a result of a lack of product differentiation, Shapiro argues that innovation comes about as a result of inventing a new product that is substantially different from an existing product. Carl Shapiro, *Competition and Innovation: Did Arrow Hit the Bull's Eye?*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY REVISITED* 361–404 (Josh Lerner & Scott Stern eds., 2012). Rather than equate more competition with less product differentiation, Shapiro suggests a better way to characterize the empirical results would be to say that “innovation incentives are low if ex post competition is so intense that even successful innovators cannot earn profits sufficient to allow a reasonable risk-adjusted rate of return on their R&D cost.” *Id.* Shapiro also argues that much of the theoretical literature conflates more competition with more innovation. He argues that instead, more competition should be measured by “an increase in the magnitude of contestable sales, or as an increase in R&D rivalry Finally, Shapiro argues that more competition should not be equated with lower market concentration. Innovation is rewarded with some degree of market power, and innovative firms will typically grow larger as less innovative firms shrink. As this happens market concentration will rise. As a result, looking at the post-innovation market and seeing a lower market concentration does not mean that there is in fact more competition in markets with lower market concentration.

TRAFFIX DEVICES, INC. V. MKTG. DISPLAYS, INC.
532 U.S. 23 (2001)

Justice Kennedy delivered the opinion of the Court.

Temporary road signs with warnings like “Road Work Ahead” or “Left Shoulder Closed” must withstand strong gusts of wind. An inventor named Robert Sarkisian obtained two utility patents for a mechanism built upon two springs (the dual-spring design) to keep these and other outdoor

signs upright despite adverse wind conditions. The holder of the now-expired Sarkisian patents, respondent Marketing Displays, Inc. (MDI), established a successful business in the manufacture and sale of sign stands incorporating the patented feature. MDI's stands for road signs were recognizable to buyers and users (it says) because the dual-spring design was visible near the base of the sign.

This litigation followed after the patents expired and a competitor, Traffix Devices, Inc., sold sign stands with a visible spring mechanism that looked like MDI's. MDI and Traffix products looked alike because they were. When Traffix started in business, it sent an MDI product abroad to have it reverse engineered, that is to say copied. Complicating matters, Traffix marketed its sign stands under a name similar to MDI's. MDI used the name "WindMaster," while Traffix, its new competitor, used "WindBuster."

MDI brought suit under the Trademark Act of 1946 (Lanham Act), 60 Stat. 427, as amended, 15 U.S.C. § 1051 *et seq.*, against Traffix for trademark infringement (based on the similar names), trade dress infringement (based on the copied dual-spring design), and unfair competition. Traffix counterclaimed on antitrust theories.

II

It is well established that trade dress can be protected under federal law. The design or packaging of a product may acquire a distinctiveness which serves to identify the product with its manufacturer or source; and a design or package which acquires this secondary meaning, assuming other requisites are met, is a trade dress which may not be used in a manner likely to cause confusion as to the origin, sponsorship, or approval of the goods. In these respects protection for trade dress exists to promote competition. As we explained just last Term, see *Wal-Mart Stores, Inc. v. Samara Brothers, Inc.*, 529 U.S. 205 (2000), various Courts of Appeals have allowed claims of trade dress infringement relying on the general provision of the Lanham Act which provides a cause of action to one who is injured when a person uses "any word, term name, symbol, or device, or any combination thereof . . . which is likely to cause confusion . . . as to the origin, sponsorship, or approval of his or her goods." 15 U.S.C. § 1125(a)(1)(A). Congress confirmed this statutory protection for trade dress by amending the Lanham Act to recognize the concept. Title 15 U.S.C. § 1125(a)(3) (1994 ed., Supp. V) provides: "In a civil action for trade dress infringement under this chapter for trade dress not registered on the principal register, the person who asserts trade dress protection has the burden of proving that the matter sought to be protected is not functional." This burden of proof gives force to the well-established rule that trade dress protection may not be claimed for product features that are functional. *Qualitex, supra*, at 164–165; *Two Pesos, Inc. v. Taco Cabana, Inc.*, 505 U.S. 763, 775 (1992). And in *Wal-Mart, supra*, we were careful to caution against misuse or overextension of trade dress. We noted that "product design almost invariably serves

purposes other than source identification.”

Trade dress protection must subsist with the recognition that in many instances there is no prohibition against copying goods and products. In general, unless an intellectual property right such as a patent or copyright protects an item, it will be subject to copying. As the Court has explained, copying is not always discouraged or disfavored by the laws which preserve our competitive economy. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 160. Allowing competitors to copy will have salutary effects in many instances. “Reverse engineering of chemical and mechanical articles in the public domain often leads to significant advances in technology.”

The principal question in this case is the effect of an expired patent on a claim of trade dress infringement. A prior patent, we conclude, has vital significance in resolving the trade dress claim. A utility patent is strong evidence that the features therein claimed are functional. If trade dress protection is sought for those features the strong evidence of functionality based on the previous patent adds great weight to the statutory presumption that features are deemed functional until proved otherwise by the party seeking trade dress protection. Where the expired patent claimed the features in question, one who seeks to establish trade dress protection must carry the heavy burden of showing that the feature is not functional, for instance by showing that it is merely an ornamental, incidental, or arbitrary aspect of the device.

In the case before us, the central advance claimed in the expired utility patents (the Sarkisian patents) is the dual-spring design; and the dual-spring design is the essential feature of the trade dress MDI now seeks to establish and to protect. The rule we have explained bars the trade dress claim, for MDI did not, and cannot, carry the burden of overcoming the strong evidentiary inference of functionality based on the disclosure of the dual-spring design in the claims of the expired patents.

The dual springs shown in the Sarkisian patents were well apart (at either end of a frame for holding a rectangular sign when one full side is the base) while the dual springs at issue here are close together (in a frame designed to hold a sign by one of its corners). As the District Court recognized, this makes little difference. The point is that the springs are necessary to the operation of the device. The fact that the springs in this very different-looking device fall within the claims of the patents is illustrated by MDI’s own position in earlier litigation. In the late 1970’s, MDI engaged in a long-running intellectual property battle with a company known as Winn-Proof. Although the precise claims of the Sarkisian patents cover sign stands with springs “spaced apart,” U.S. Patent No. 3,646,696, col. 4; U.S. Patent No. 3,662,482, col. 4, the Winn-Proof sign stands (with springs much like the sign stands at issue here) were found to infringe the patents by the United States District Court for the District of Oregon, and

the Court of Appeals for the Ninth Circuit affirmed the judgment. *Sarkisian v. Winn-Proof Corp.*, 697 F.2d 1313 (1983). Although the Winn-Proof traffic sign stand (with dual springs close together) did not appear, then, to infringe the literal terms of the patent claims (which called for “spaced apart” springs), the Winn-Proof sign stand was found to infringe the patents under the doctrine of equivalents, which allows a finding of patent infringement even when the accused product does not fall within the literal terms of the claims. *Id.*, at 1321–1322; see generally *Warner–Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997). In light of this past ruling—a ruling procured at MDI’s own insistence—it must be concluded the products here at issue would have been covered by the claims of the expired patents.

The rationale for the rule that the disclosure of a feature in the claims of a utility patent constitutes strong evidence of functionality is well illustrated in this case. The dual-spring design serves the important purpose of keeping the sign upright even in heavy wind conditions; and, as confirmed by the statements in the expired patents, it does so in a unique and useful manner. As the specification of one of the patents recites, prior art “devices, in practice, will topple under the force of a strong wind.” U.S. Patent No. 3,662,482, col. 1. The dual-spring design allows sign stands to resist toppling in strong winds. Using a dual-spring design rather than a single spring achieves important operational advantages. For example, the specifications of the patents note that the “use of a pair of springs . . . as opposed to the use of a single spring to support the frame structure prevents canting or twisting of the sign around a vertical axis,” and that, if not prevented, twisting “may cause damage to the spring structure and may result in tipping of the device.” U.S. Patent No. 3,646,696, col. 3. In the course of patent prosecution, it was said that “[t]he use of a pair of spring connections as opposed to a single spring connection . . . forms an important part of this combination” because it “forc[es] the sign frame to tip along the longitudinal axis of the elongated ground-engaging members.” App. 218. The dual-spring design affects the cost of the device as well; it was acknowledged that the device “could use three springs but this would unnecessarily increase the cost of the device.” *Id.*, at 217. These statements made in the patent applications and in the course of procuring the patents demonstrate the functionality of the design. MDI does not assert that any of these representations are mistaken or inaccurate, and this is further strong evidence of the functionality of the dual-spring design.

III

In finding for MDI on the trade dress issue the Court of Appeals gave insufficient recognition to the importance of the expired utility patents, and their evidentiary significance, in establishing the functionality of the device. The error likely was caused by its misinterpretation of trade dress principles in other respects. As we have noted, even if there has been no previous utility patent the party asserting trade dress has the burden to establish the

nonfunctionality of alleged trade dress features. MDI could not meet this burden. Discussing trademarks, we have said “[i]n general terms, a product feature is functional, and cannot serve as a trademark, ‘if it is essential to the use or purpose of the article or if it affects the cost or quality of the article.’” *Qualitex*, 514 U.S., at 165 (quoting *Inwood Laboratories, Inc. v. Ives Laboratories, Inc.*, 456 U.S. 844, 850, n. 10 (1982)). Expanding upon the meaning of this phrase, we have observed that a functional feature is one the “exclusive use of [which] would put competitors at a significant non-reputation-related disadvantage.” The Court of Appeals in the instant case seemed to interpret this language to mean that a necessary test for functionality is “whether the particular product configuration is a competitive necessity.” 200 F.3d, at 940. See also *Vornado*, 58 F.3d, at 1507 (“Functionality, by contrast, has been defined both by our circuit, and more recently by the Supreme Court, in terms of competitive need”). This was incorrect as a comprehensive definition. As explained in *Qualitex*, *supra*, and *Inwood*, *supra*, a feature is also functional when it is essential to the use or purpose of the device or when it affects the cost or quality of the device. The *Qualitex* decision did not purport to displace this traditional rule. Instead, it quoted the rule as *Inwood* had set it forth. It is proper to inquire into a “significant non-reputation-related disadvantage” in cases of esthetic functionality, the question involved in *Qualitex*. Where the design is functional under the *Inwood* formulation there is no need to proceed further to consider if there is a competitive necessity for the feature. In *Qualitex*, by contrast, esthetic functionality was the central question, there having been no indication that the green-gold color of the laundry press pad had any bearing on the use or purpose of the product or its cost or quality....

There is no need, furthermore, to engage, as did the Court of Appeals, in speculation about other design possibilities, such as using three or four springs which might serve the same purpose. 200 F.3d, at 940. Here, the functionality of the spring design means that competitors need not explore whether other spring juxtapositions might be used. The dual-spring design is not an arbitrary flourish in the configuration of MDI’s product; it is the reason the device works. Other designs need not be attempted.

Because the dual-spring design is functional, it is unnecessary for competitors to explore designs to hide the springs, say, by using a box or framework to cover them, as suggested by the Court of Appeals. *Ibid*. The dual-spring design assures the user the device will work. If buyers are assured the product serves its purpose by seeing the operative mechanism that in itself serves an important market need. It would be at cross-purposes to those objectives, and something of a paradox, were we to require the manufacturer to conceal the very item the user seeks.

In a case where a manufacturer seeks to protect arbitrary, incidental, or ornamental aspects of features of a product found in the patent claims, such as arbitrary curves in the legs or an ornamental pattern painted on the springs, a different result might obtain. There the manufacturer could

perhaps prove that those aspects do not serve a purpose within the terms of the utility patent. The inquiry into whether such features, asserted to be trade dress, are functional by reason of their inclusion in the claims of an expired utility patent could be aided by going beyond the claims and examining the patent and its prosecution history to see if the feature in question is shown as a useful part of the invention. No such claim is made here, however. MDI in essence seeks protection for the dual-spring design alone. The asserted trade dress consists simply of the dual-spring design, four legs, a base, an upright, and a sign. MDI has pointed to nothing arbitrary about the components of its device or the way they are assembled. The Lanham Act does not exist to reward manufacturers for their innovation in creating a particular device; that is the purpose of the patent law and its period of exclusivity. The Lanham Act, furthermore, does not protect trade dress in a functional design simply because an investment has been made to encourage the public to associate a particular functional feature with a single manufacturer or seller. The Court of Appeals erred in viewing MDI as possessing the right to exclude competitors from using a design identical to MDI's and to require those competitors to adopt a different design simply to avoid copying it. MDI cannot gain the exclusive right to produce sign stands using the dual-spring design by asserting that consumers associate it with the look of the invention itself. Whether a utility patent has expired or there has been no utility patent at all, a product design which has a particular appearance may be functional because it is "essential to the use or purpose of the article" or "affects the cost or quality of the article." *Inwood*, 456 U.S., at 850, n. 10.

TraFFix and some of its *amici* argue that the Patent Clause of the Constitution, Art. I, § 8, cl. 8, of its own force, prohibits the holder of an expired utility patent from claiming trade dress protection.... We need not resolve this question. If, despite the rule that functional features may not be the subject of trade dress protection, a case arises in which trade dress becomes the practical equivalent of an expired utility patent, that will be time enough to consider the matter. The judgment of the Court of Appeals is reversed, and the case is remanded for further proceedings consistent with this opinion.

NOTES AND QUESTIONS

Professor Thomas Cotter writes that antitrust and IP law both seek to minimize the expected costs of (1) false positives, cases wrongly decided in favor of IP defendants or antitrust plaintiffs; (2) false negatives, cases wrongly decided in favor of IP plaintiffs or antitrust defendants; and (3) the costs of adjudication itself. Thomas F. Cotter, *The Procompetitive Interest in Intellectual Property Law*, 48 Wm. & Mary L. Rev. 483, 490–91 (2006). But the fact that antitrust and IP law may share broad goals does not necessarily mean that they should share particular policies. *See id.* at 491. While it may be "good antitrust policy to incur substantial adjudication costs to define the market and ascertain anticompetitive consequences," in

certain kinds of IP cases it may make sense to avoid these costs when “the stakes are sufficiently low” or if we are reasonably sure that the “expected costs, including error costs,” of ruling for the IP plaintiff will outweigh the costs of ruling for the IP defendant. In cases like *TrafFix*, the Supreme Court “seems to suggest that the appropriate scope of trademark protection is narrow because otherwise the social costs, including the potential for trademark rights to interfere with competition and technological progress, outweigh the social benefits.” In Cotter’s analysis, several IP doctrines condemn IP owners or excuse IP infringers for the “express purpose of promoting competition,” including misuse doctrine, where IP condemns conduct that antitrust allows absent proof of market power; merger or fair use doctrine, where courts do not require IP defendants to define the market or measure “in any way comparable to the plaintiff’s burden in antitrust litigation”; and functionality doctrine, where courts allow copying when it is justified by competitive need but do not ask whether exclusive rights would harm competition in a well-defined market. Cotter argues that courts should not “take upon themselves of promoting competition” via a “greatly expanded misuse doctrine.” On the other hand, fair use and trade dress should probably be more aggressively procompetitive than antitrust principles would suggest, *id.*, and Cotter asks whether trade-dress protection “is ever worth even a small risk of anticompetitive harm.”

NOTE: DESIGN PATENTS AND INTEROPERABILITY

The Patent Act permits inventors to obtain two main types of patents, utility patents and design patents. A utility patent, which is the most common type, is for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement therefor...” 35 U.S.C. § 101. Someone can receive a design patent for something that is new, original, ornamental and nonobvious. 35 U.S.C. §§171, 101. Design patents are generally granted much faster and more easily than utility patents. See Dennis Crouch, *Design Patents: Sailing through the PTO*, <http://www.patentlyo.com/patent/2009/04/design-patents-sailing-through-the-pto.html>, April 2, 2009. However, the design claimed in a design patent cannot be dictated by functional requirements. “[W]here a design contains both functional and non-functional elements, the scope of the claim must be construed in order to identify the non-functional aspects of the design.” *OddzOn Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1404 (Fed.Cir.1997).

The policy is fairly clear. As in *TrafFix*, it is to prevent a design patent from monopolizing a function, thus effectively converting a design patent into a utility patent. See CHISUM ON PATENTS §23.03[4] (2006). Courts have formulated different tests to determine whether a claimed design patent is impermissibly functional, including whether the patent’s claims are “dictated solely by function”, “solely functional,” or “primarily functional.” Perry J. Saidman, *Functionality and Design Patent Validity and*

Infringement, 91 J. Pat. & Trademark Off. Soc'y 313, 315 (2009). If a design patent is primarily functional rather than primarily ornamental, it is invalid. *Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc.*, 853 F.2d 1557, 1563 (Fed.Cir.1988). Evidence of alternative designs tend to show that a patented design is not dictated solely by functional requirements. See, e.g., *L.A. Gear, Inc. v. Thom McAn Shoe Co.*, 988 F.2d 1117 (Fed.Cir. 1993).

Design patents can limit interoperability when someone makes a durable good such as an automobile or computer printer and then protects replacement parts with a design patent whose claims write on the interconnection features. For example, in *Chrysler Motors Corp. v. Auto Body Panels of Ohio, Inc.*, 908 F.2d 951 (Fed. Cir. 1990), Chrysler designed its aftermarket bumpers in such a way that rivals in the replacement bumper market could not make one that would fit a Chrysler without infringing Chrysler's design patents. See also *Static Control Components, Inc. v. Lexmark Intern., Inc.*, 487 F.Supp.2d 830 (E.D.Ky. Apr. 24 2007), modified, 615 F.Supp.2d 575 (E.D.Ky. March 31, 2009), in which Lexmark used a microprocessor chip protected by a design patent in order to activate a newly installed replacement ink cartridge. The patent thus prevented rivals from making replacement cartridges that would fit into the Lexmark printer.

In *Best Lock Corp. v. Ilco Unican Corp.* 94 F.3d 1563, 1564 (Fed.Cir.1996), a key manufacturer attempted to maintain a design patent on a key which had a wider key profile than standard keys and included other features to deter lock picking. The manufacturer claimed that "although a particular key and its corresponding lock must mate to operate the lock, an unlimited number of key blade and corresponding keyway designs are available." Nevertheless, the court found the key design patent invalid on the ground that the functional concern that the key has to interact correctly with the lock dictated the key design:

The parties do not dispute that the key blade must be designed as shown in order to perform its intended function -- to fit into its corresponding lock's keyway. An attempt to create a key blade with a different design would necessarily fail because no alternative blank key blade would fit the corresponding lock. In fact, Best Lock admitted that no other shaped key blade would fit into the corresponding keyway, and it presented no evidence to the contrary. Therefore, we find no clear error in the court's finding that the claimed key blade design was dictated solely by the key blade's function. Any aesthetic appeal of the key blade design shown in the '636 patent is the inevitable result of having a shape that is dictated solely by functional concerns.

Do these holdings amount to condemning a particular type of "tying arrangement" without requiring a showing of market power? Granted,

under the *Chrysler* holding an automobile manufacturer cannot use a design patent in order to force its customers to purchase its own aftermarket bumpers, but why should this be a problem given that there are plenty of automobiles not manufactured by Chrysler? Do the patent laws have an interest to protect here that reaches beyond antitrust?

Compare the American approach to design protection with that taken in the European Union, created by Council Regulation of 12 December 2001 (Reg. 6/2002).² The system is directly applicable in every EU Member State.³ Under this regulation, two types of design protection are available, the Unregistered Community Design ('UCD') and the Registered Community Design ('RCD'). Reg. 6/2002 was subsequently implemented by Commission Regulation of 21 October 2002 ('Reg. 2245/2002'), which lays down all kinds of formal and procedural requirements. The Office for Harmonization in the Internal Market (Trade Marks and Designs) ('OHIM') is responsible for carrying out the tasks assigned in Reg. 6/2002, such as the maintenance of a system for application and registration of RCD's and the implementation of an enforcement system. Upon application for registration, the OHIM does not engage in a substantive examination of the design.⁴ The OHIM will merely check whether the offered product is one within the subject-matter of design protection under Article 3(a) of Reg. 6/2002 and whether the design doesn't violate principles of public policy and morality.

Reg. 6/2002 defines "design" as "*the appearance of the whole or a part of a product resulting from the features of, in particular, the lines, contours,*

² Council Regulation (EC) No. 6/2002 of 12 December 2001 on Community designs, OJ 2002, L 3/1. See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:003:0001:0024:EN:PDF>. Reg. 6/2002 was amended by Council Regulation No. 1891/2006 of 18 December 2006 to give effect to the accession of the European Community to the Geneva Act of the Hague Agreement concerning the international registration of industrial designs, OJ 2006, L 386/14. See http://oami.europa.eu/ows/rw/resource/documents/RCD/regulations/62002_en_cv.pdf.

³ Design protection was previously harmonized by Directive 98/71/EC of the European Parliament and of the Council of 13 October 1998 on the legal protection of designs, OJ 1998, L286, p. 28 / 35. However, design protection was still limited to the territories of the different Member States under this Directive, which could lead to a division of the internal market, see par. 4 of the Preamble to Reg. 6/2002. Therefore, the EU legislature deemed the introduction of a system of unified design protection necessary.

⁴ Par. 18 of the Preamble to Reg. 6/2002.

colours, shape, texture and/or materials of the product itself and/or its ornamentation”⁵ Design protection is thus available for a wide range of items.⁶ The Preamble to Reg. 6/2002 specifies that no protection shall be awarded for a design that is solely dictated by a technical function.⁷

An unregistered design only protects against copying for three years after it has been disclosed to the public. The registered design confers an exclusive right on its owner for up to 25 years,⁸ which extends to independent development by a third party. Article 19(1) of Reg. 6/2002 specifies the rights conferred by a RCD:

“A registered Community design shall confer on its holder the exclusive right to use it and to prevent any third party not having his consent from using it. The aforementioned use shall cover, in particular, the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied, or stocking such a product for those purposes.”

The owner of a RCD can therefore prevent anyone from using the design, regardless of the product that incorporates the design.

Considering the broad nature of the subject-matter eligible for Community design protection, it is likely that a designer might also want to obtain other forms of industrial property rights on its design. The Preamble to Reg. 6/2002 states that *“This Regulation does not preclude the application to designs protected by Community designs of the industrial property laws or other relevant laws of the Member States, such as those relating to design protection acquired by registration or those relating to unregistered designs, trade marks, patents and utility models, unfair*

⁵ Article 3(a) of Reg. 6/2002.

⁶ Article 3(b) of Reg. 6/2002 explicitly mentions that a design, the appearance of a product, can extend to component parts of a complex product, packaging, get-up, graphic symbols and typographic typefaces.

⁷ Par. 10 of the Preamble and Article 8(1) of Reg. 6/2002. For an example, see Decision of the OHIM Invalidity Division of 3 March 2011, ICD 7081 (*Firma Weremczuk Spółka Jawna v. Marzena Karczmarek Agrotop- Kaczmarek*), par 13. See

http://oami.europa.eu/ows/rw/resource/documents/RCD/case-law/invalidity/ICD%20000007081%20decision%20_EN_.pdf. The Invalidity Division of the OHIM declared a design for a harvesting machine invalid because *“Every essential feature of the design has been chosen with a view to achieving the best possible technical performance.”*

⁸ Article 12 of Reg. 6/2002. A registered design initially confers protection for five years. This term is renewable up to four times.

competition or civil liability.”⁹ Moreover, the Preamble recognizes that Community design may cumulate with protection under the copyright laws of the different EU Member States. Since copyright law is not completely harmonized within the European Union, the Member States decide on the scope of protection of their copyright laws.¹⁰

Designs are distinguished from patents by Article 8(1) of Reg. 6/2002, providing that the appearance of a design may not be ‘solely dictated by its technical function’. It seems that the OHIM has interpreted this provision to hold that “*As long as the designer has some freedom in the development of the feature of appearance of this element, said feature is not solely dictated by the technical function of the product.*”¹¹

**NOTE:
COMPETITION AND THE “TRADEMARK USE” DOCTRINE**

To establish trademark infringement under the Federal Lanham Act, a trademark holder must prove: (1) ownership of a valid mark that is entitled to protection, and (2) that the accused infringer’s *use* of the trademark is likely to cause confusion within the consuming public. A trademark is “used in commerce” in connection with goods when the mark is “placed in any manner on the goods or their containers or the displays associated therewith or on the tags or labels affixed thereto, ... or on the documents associated with the goods or their sale.” 15 U.S.C. § 1127. A mark is also “used in commerce” in connection with services when the mark is “used or displayed in the sale or advertising of services and the services are rendered in commerce” *Ibid.* However, courts have interpreted the meaning of “use” differently depending on whether the alleged defendant uses the trademark “as a mark” – that is, whether it misleadingly created the impression that the mark holder is the source of the accused infringer’s goods or services.

Customers generally rely on trademarks to identify goods and services of one business and distinguish them from those of others. See *Hanover Star Milling Co. v. Metcalf*, 240 U.S. 403, 412 (1916) (the “primary and proper function” of a trademark is to “identify the origin or ownership of the article to which it is affixed”). Today, however, consumers also use internet search engines or other computer assisted procedures to locate goods or services. Suppose that a firm (1) uses someone else’s mark for comparative advertising purposes, or (2) sells “keywords,” including the trademarks of others, in displaying search

⁹ Preamble to Reg. 6/2002, par. 31.

¹⁰ Par. 32.

¹¹ OHIM Invalidity Division, Decision of 7 September 2011, Case ICD 8225 (*ASSTEC Assembly Technology GmbH & Co. KG v. Thomas Nagel*), par. 17.

results.

In *1-800-CONTACTS Inc. v. WhenU.Com Inc.*, 414 F.3d 400, 404-05 (2d Cir. 2005), the defendant WhenU.Com provided a software program that runs in the background as a computer user surfs the Web. The defendant's program opened a "pop-up" advertising window related to subject matter that the user was viewing. For example, if the user was viewing a website advertising Toyota automobiles a pop-up window advertising Nissan's might appear. The pop-up did not suggest that Toyota made Nissans. Mainly it created an opportunity for the user to compare the virtues of Toyotas and Nissans. Plaintiff 1-800-CONTACTS alleged that the pop-up advertisements generated by the program on behalf of the plaintiff's eye care competitors infringed its trademark when computers users visited the plaintiff's website. The 2nd Circuit found that the WhenU.com did not "use" 1-800's trademarks, mainly because the specific advertisement in question generated by WhenU.Com's software was not triggered by a trademark at all, but rather by an internal product category associated with the plaintiff's Web address. The Court found:

...WhenU does not ... "place" 1-800 trademarks on any goods or services in order to pass them off as emanating from or authorized by 1-800....

A company's internal utilization of a trademark in a way that does not communicate it to the public is analogous to an individual's private thoughts about a trademark. Such conduct simply does not violate the Lanham Act, which is concerned with the use of trademarks in connection with the sale of goods or services in a manner likely to lead to consumer confusion as to the source of such goods or services.

That seems right, doesn't it? Suppose a television advertisement for Chrysler also includes pictures of Fords, including Ford's trademarks, so that Chrysler can compare the virtues of its own cars to those of other brands. In this case Chrysler "uses" the Ford trademark, but it does not use it "as a mark" – that is, it does not use it to confuse customers by getting them to think that its cars are really Fords.

By contrast, in *Rescuecom Corp. v. Google Inc.*, 562 F.3d 123, 125-26 (2d Cir. 2009), Rescuecom challenged Google's practice of allowing advertisers to purchase keywords, including trademarks, which Internet users could enter as search terms. As the court described the practice:

When a searcher uses Google's search engine by submitting a search term, Google may place advertisements on the user's screen. Google will do so if an advertiser, having determined that its ad is likely to be of interest to a searcher who enters the particular term, has purchased from Google the placement of its ad on the screen of the searcher who entered that search

term. What Google places on the searcher's screen is more than simply an advertisement. It is also a link to the advertiser's website, so that in response to such an ad, if the searcher clicks on the link, he will open the advertiser's website, which offers not only additional information about the advertiser, but also perhaps the option to purchase the goods and services of the advertiser over the Internet.

The case involved a motion to dismiss, and one of the things that Rescuecom alleged is that a reader could not always distinguish the hit that constituted an advertisement from other hits. So, for example, someone searching "Toyota" might also call up an advertisement for Nissan. There was no allegation that the search actually excluded "Toyota" hits, but only that it added other hits as well.

The court concluded that this constituted a "use" covered by the Lanham Act:

First, in contrast to *1-800*, where we emphasized that the defendant made no use whatsoever of the plaintiff's trademark, here what Google is recommending and selling to its advertisers is Rescuecom's trademark. Second, in contrast with the facts of *1-800* where the defendant did not "use or display," much less sell, trademarks as search terms to its advertisers, here Google displays, offers, and sells Rescuecom's mark to Google's advertising customers when selling its advertising services. In addition, Google encourages the purchase of Rescuecom's mark through its Keyword Suggestion Tool.

But doesn't Google's practice also provide an efficient way for customers to find desired products and services by comparing them with one another? Comparison and confusion are not the same thing. For example, a drug store typically places its own store-brand generic products next to the trademarked products they emulate in order to induce a customer who has specifically sought out the trademarked product to consider the store's less-expensive alternative. As a result you might walk into the store looking for "Tylenol," but leave with a bottle of acetaminophen, a cheaper generic that is chemically identical. Google employs this same marketing strategy by informing computer users who have sought out a specific trademarked product about available alternatives that may be of interest to them. Second, computer users are much more sophisticated now than before. The court suggested that Google's practice might cause customer confusion, but there is little empirical support for that conclusion. How many customers searching for, say, "Canon" cameras, and then seeing a website for "Minolta" cameras would believe they are buying a Canon when they are actually purchasing a Minolta. See Mark A. Lemley & Mark P. McKenna, *Owning Mark(et)s*, 109 MICH. L. REV. 137 (2010).

In *Rosetta Stone Ltd. v. Google, Inc.*, 676 F.3d 144 (4th Cir. 2012), Rosetta Stone, the maker of a popular piece of language-learning software, alleged that Google's use of Rosetta's trademark in the advertising of others' products resulted in customer confusion. Google used search terms as "triggers" that would launch advertising for products made by others that used the trademarked product in their advertising. In some cases these ads were actually for pirated or infringing goods. The district court granted summary judgment in favor of Google, holding that Google's policy was not likely to cause confusion, in part because the consuming public was sufficiently sophisticated so as to not be confused. The Fourth Circuit reversed, holding that there was a genuine issue of material fact as to whether Google's use of Rosetta Stone's mark was likely to confuse consumers.

Google's policy permitted limited use of trademarks in advertising that accompanied its search results as long as "(1) the sponsor is a reseller of a genuine trademarked product; (2) the sponsor makes or sells component parts for a trademarked product; (3) the sponsor offers compatible parts or goods for use with the trademarked product; or (4) the sponsor provides information about or reviews a trademarked product." *Id.* at *3. Rosetta Stone presented evidence that suggested that some customers were nonetheless confused by the placement of ads on Google's search-results page, and the confused customers mistakenly purchased counterfeit versions of the Rosetta Stone software. Because of this evidence, along with a study commissioned by Google that showed that "the likelihood of confusion remains high when trademark terms are used in the title or body of a sponsored link appearing on a search results page," the Fourth Circuit concluded that whether customers were confused and whether customers were sufficiently sophisticated were issues that should be decided at trial, rather than at the summary judgment stage. *Id.* at *9.

The court concluded:

... [T]here is sufficient evidence in the record to create a question of fact as to consumer sophistication that cannot be resolved on summary judgment. The record includes deposition testimony from Rosetta Stone customers who purchased counterfeit ROSETTA STONE software from sponsored links that they believed to be either affiliated with or authorized by Rosetta Stone to sell genuine software. The evidence also includes an internal Google study reflecting that even well-educated, seasoned Internet consumers are confused by the nature of Google's sponsored links and are sometimes even unaware that sponsored links are, in actuality, advertisements. At the summary judgment stage, we cannot say on this record that the consumer sophistication factor favors Google as a matter of law. There is enough evidence, if viewed in a light most favorable to Rosetta Stone, to find that this factor suggests a

likelihood of confusion.

Query: should it be Google's job to ensure that firms advertising on its search engine results to ensure that they are not promoting infringing products? Think of the consequences of a rule that made newspapers liable for damages if products that they advertised were liable for patent, copyright, or trademark infringement? If the local Toyota dealership wants to advertise a promotion on the Prius in the *Gazette*, should the *Gazette* be required to do a global IP search to see if anything in the Prius infringes someone else's IP rights. Suppose, however, that the *Gazette* already knows about an infringement? Should it have a duty to deny the advertisement?