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DAMNED IF YOU DO, DAMNED IF YOU DON'T, AND DAMNED IN BETWEEN: AN ECONOMIC APPROACH TO THE CROSS-MARKET REPERCUSSIONS OF THE APPLICATION OF 35 U.S.C. § 271 TO INTERNATIONALLY IMPLEMENTED PROCESS PATENTS

Alejandro Valencia

I. Introduction

Owners of patents on internationally implemented processes could soon find themselves caught between a rock and a hard place in terms of legal remuneration. That is because process patents, made up of a number of discrete steps, receive no

protection from infringement in the U.S. so long as one of any number of steps ***256** takes place abroad. In part due to the misusage of a statutory provision, 35 U.S.C. § 271(f), and in part due to judicial and legislative reluctance to create new law, this process patent problem represents an ongoing disjunction between what the law is--a fact-based, black-and-white determination of infringement--and what the law should be--a balanced and incremental finding of infringement where deserved. Not only does this process patent problem affect those patent owners who seek to enforce court-made judgments on infringement, it also affects patent owners seeking to resolve alleged infringement via alternative avenues. This note identifies the legal problem at its most fundamental level and attempts to address the problem's inefficiencies and unintended consequences through the application of both positive[1] and normative[2] economic concepts.

II. Background

Historically, the laws that govern infringement of U.S. patents--primarily 35 U.S.C. § 271--have been given territorial effect only. That is, they have been deemed to reach only as far as U.S. borders.[3] So a patented apparatus or method was only infringed if all components of the apparatus or all steps of the method were made, used, or sold within the U.S. The Patent Act of 1984, however, added Section 271(f) to the existing statutory scheme.[4] The provision holds liable for infringement those who "suppl[[y] or caus[e] to be supplied in or from the United States all or a substantial portion of the components of a patented invention . . . in such manner as to actively induce the combination of such components outside the United States in a manner that would infringe the patent if such combination occurred within the United States."[5]

***257** Congress intended the amendment to respond to a statutory gap perceived as too forgiving to alleged infringers of patented devices assembled abroad from unpatented parts originally made in the U.S.[6] The provision expanded the then-existing reach of infringement liability from inventions assembled totally in the U.S. to inventions assembled partly in the U.S. and partly elsewhere.[7] But while the provision aimed to crack down on previously unenforceable transnational infringement, the provision's language seemed to apply only to patents for apparatuses requiring physical assembly and not to process patents, which might also be implemented across national borders.[8]

In retrospect, the '84 amendment appears to have been shortsighted as it has drawn quite a bit of criticism from scholars on several bases. Some believe it too narrow in its language as it appears, on its face, to apply only to apparatus claims and not to process claims.[9] Others claim it is out-dated because applying the erstwhile provision to modern technologies that were unforeseen at the time of its enactment requires an unforgivable degree of statutory finessing.[10] And yet others argue that it is too simple in its scope and application because it applies to mechanical devices and little else.[11]

Due to the specific nature of the provision, in its aim to curb infringement in large-scale, international manufacturing operations, process infringement cases rarely necessitated its application, leaving a rather small body of relevant case law ***258** for comparison. However, the widely watched case,[12] NTP, Inc. v. Research In Motion, Ltd,[13] not only applied the provision, it prompted requests for clarification of the law[14] and confirmed criticisms of its unfitness to be applied to process patents.[15]

At issue in NTP was RIM's alleged infringement of a patented process held by NTP.[16] The process involved the transmission of information in wireless communications systems.[17] Although RIM's BlackBerry handheld communication devices were sold in the U.S., and dozens of signal transmission stations used in the process were also in the U.S., RIM and its relay station for sending email wirelessly were located in Canada.[18] In other words, certain steps of NTP's patented process[19] had been carried out in Canada--not the U.S. This, the court held, meant that the process had not been used "within the United States,"[20] as is statutorily required[21] for a finding of infringement liability. The court did, however, equate the "components" set forth in Section 271(f) to the steps in the performance of a ***259** patented process, explaining that infringement of a process occurred only when "each of the steps is performed within [the U.S.]"[22]

Then, in 2009's Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., the Court of Appeals for the Federal Circuit decided that Section 271(f) in fact does not apply to patented processes,[23] a holding that directly contradicted the NTP court's explicit classification of a method step as a "component" under Section 271(f). However, while such a decision would seem to break new ground, the holding more simply removed a tool that, while legally applicable, was completely ineffective for transnationally implemented processes. In other words, while Section 271(f) may have technically been applicable as a statute, it was literally impossible to recover under in the case of international process patent infringement. Thus, the court's categorical denial of Section 271(f) protection to process patents had no effect whatsoever on a patent owner's prospects for recovery because those prospects were before Cardiac Pacemakers and are now nil. In that sense, the method patent owner

has been left where she always stood--before and even after Section 271(f)'s enactment--with no statutory recourse. The only difference after Cardiac Pacemakers is that the process patent owner must now rely on some other provision of Section 271 in seeking recourse.

It is important here to note that the applications of both Section 271(f), under the defunct NTP "component" definition, and any other provision of Section 271 yield the same result--no infringement recovery for the owner of an unauthorizedly used internationally implemented process patent. In that way, NTP's holding--that the unauthorized use of a method with at least one step taking place outside the U.S. does not constitute "infringement"--spanned far beyond the reach of Section 271(f) and across the entire current U.S. patent regime. One can induce, then, that the legal standard for finding infringement of processes under any other provision of Section 271 is exactly the same as that which was applied under Section 271(f).

III. From Patents to Economics

Between Section 271 as it stands and NTP as an exemplar of practical application of current infringement standards to transnationally implemented process patents, what can be gleaned about the current state of the law? As Chisum noted well before the empirical validation provided by NTP:

> Assessed in terms of economic policy, section 271(f) is ill-conceived. It was presumably an attempt to close a loophole created by Deepsouth, but its most immediate effect is to create one more incentive for U.S. companies who compete in foreign markets to move their manufacturing facilities abroad. Furthermore, the statute is incomplete. It covers the manufacture and export of unpatented components of patented machines and other structural combinations. It does not cover manufacture and export of a component for use in a patented ***260** process--even though many valuable inventions take the form of new processes for using materials or components.[24]

Chisum's thesis was sound, and the later NTP served only to shore up his position. Moreover, now that Section 271(f) is no longer the statute of choice, at least with respect to owners of method patents without whose authorization those patents have been implemented across national borders, his reasoning can be applied just as easily to Section 271 on the whole. In other words, Chisum's criticism was that Section 271(f) would fail with respect to certain aspects of patent protection despite Section 271(f)'s apparent legislative intent. Cardiac Pacemakers notwithstanding, the legislative intent--to protect against transnational patent infringement--is still undoubtedly a worthwhile effort. That said, the absence of the availability of a statute claiming to but not actually providing protection neither changes the fact that process patent owners have no statutory basis on which to bring a meritorious suit for international implementation of their methods nor lessens the existence of the problem. As a matter of fact, the very enactment of Section 271(f) highlighted the existence of the problem, and Cardiac Pacemakers' denial of the provision's applicability to method patents thereby simply transfers the criticism from the Section 271(f) provision itself to Section 271's lack of a method-specific counterpart to Section 271(f).

Although the parties to NTP eventually settled the matter precluding a court judgment,[25] a valuable lesson can be taken away from the NTP court's interpretation of the standard for a finding of infringement of internationally implemented process patents. Note that the parties established the settlement amount using only the apparatus claims as a basis, as the process claims had been held uninfringed.[26]

The parties settled the infringement suit for $612 million.[27] Assuming the monetary value attached to the alleged infringement of NTP's process claims constituted some amount on par with that settled for on its apparatus claims, one might infer that a different finding on the process claims could mean the difference of hundreds of millions of dollars to both parties. So this step-location-based infringement determination can lead to drastic results totally disproportionate to the triviality of their causes. In other words, the outcome is the assignment of compensation or liability based solely on a factual determination that should be accorded far less moment. As a result, companies now theoretically have the perverse incentive to offshore their operations--to elude the weak arm of Section 271 infringement.[28]

*261 IV. Section 271, Markets and Market Spillovers

Having proposed the potential consequences resulting from an application of current infringement standards to internationally implemented process patents, one might take an inductive look at what economic generalities can be drawn from such

applications. To restate, the legal rule in applying Section 271 to process patents is as follows: all steps of a patented process must be carried out within in the U.S. for a finding of infringement.[29] Or inversely, infringement will not be found so long as a single step of a process is carried out abroad.[30]

A. Building the Section 271 Marketplace

As with any hypothetical world, we must define the boundaries of, the participants in, and the rules that govern the world. The nature of the process patent problem is quite different from those usually addressed in economic terms, but some common threads do exist.

1. The Section 271 Primary Market and Secondary Markets

For a proper economic analysis of the above rule, one must consider not only those cases in which the court applies Section 271 to the market, which we will call the primary market, but also those cases in which the court may not issue a judgment at all. That is to say, although a case does not ultimately reach judgment on Section 271 infringement, more subtle effects of Section 271 can be felt in two other economic situations: (1) where the unauthorized use of a process patent continues despite knowledge of such use on the part of the patent holder and (2) where the case is settled between the patent holder and the alleged infringer.

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Figure 1. The Primary and Secondary Section 271 Markets

We will call these two markets the *secondary markets*, as they do not feel the direct effect of Section 271 application but only the attenuated, tangential effect of a change in the market participants' motivations. In other words, while Section 271 creates the rule of law, i.e., the market conditions, in the primary market, it only creates the basis of decisions of the market participants in the secondary markets.

***262** 2. The Section 271 Two-Party Market

As with any market, a Section 271 market begins and ends with its participants. Unlike traditional economic markets, however, a Section 271 market consists only of two participants, the patent holder and the alleged infringer. While this two-party market model does not fit neatly within the traditional market model,[31] the patent holder and the alleged infringer do represent larger market segments of like-minded participants, analogous to the "producers" and "consumers" of more typical economic markets. So it is helpful to think of the patent holder and the alleged infringer as factions within themselves as opposed to individual actors.

3. Section 271 Efficiency

Economists use the neoclassical economic term of allocative efficiency to describe market efficiency in terms of producers and consumers, and the benefit to both as a function of the transfer of goods between them.[32] Optimal allocative efficiency, therefore, is achieved through an equilibrium in the market whereby both producers and consumers maximize their respective benefits--and perhaps more importantly, the benefit to both as a system is maximized--given market conditions.[33]

Applied generally to the process patent problem, then, we define Section 271 allocative efficiency as the benefit to both patent holder and alleged infringer given the market conditions. Market conditions could be embodied by the court's judgment in a Section 271 context, the financial constraints and potential rewards to the patent holder involved in bringing a Section 271 suit, or the bargaining power of the parties in a Section 271 settlement context. Further, Section 271 optimal allocative efficiency in this context is achieved when the patent holder is able to ***263** recover the exact amount of compensation he is owed for the unauthorized use of his patented process. Thus, the patent holder's exact compensation implies the alleged infringer will not be assessed any liability for which he is not responsible. Therefore, both the patent holder and the alleged infringer maximize the benefits they receive, whether by maximization of compensation or by minimization of liability.

We conceptualize "benefit" to the two parties as compensation to the patent holder for unauthorized use of his patent and, to

an equal extent, the alleged infringer's liability in using the process. Thus, the market is zero-sum in the fact that more compensation owed to the patent owner means more liability for the alleged infringer and vice versa.

We use a classical mathematical conceptualization of efficiency or yield-- actual output divided by theoretical output--to quantify the results. The reasons for this are several. First, we assume that the only cost or input to the system is the investment by the patent holder in the patented process itself. Thus, although we neglect a plethora of financial realities, the market concerns itself with the use of the patent, not the practicalities of business or manufacturing processes. Further, we assume the system output or total benefit is zero-sum in that the total output between the patent holder and the alleged infringer remains constant. Because of the linearity of such a system, if the compensation to the patent holder increases, the liability assessed to the alleged infringer necessarily decreases in the same amount. Secondly, and in light of the fixed nature of the input, we need only concern ourselves with the allocation of benefit upon system output. Hence, allocative efficiency is arrived at by answering the following question: Given the proportion of the patented process used by the alleged infringer, how much is the patent holder compensated for the unauthorized use in light of the total benefit to be had?

4. Section 271 Rationality and Market Failure

Another tool often used by the economist is the assumption of rationality.[34] Under this assumption, the actions of market actors are explained by assuming that the actions taken are based on the rational choices of the actor.[35] In the Section 271 context, the rationality assumption does not apply. This is because unlike in a free market, where parties make choices rationally to increase their respective benefits, the choice in a Section 271 market is taken away from otherwise freely bargaining parties by the court in its role as adjudicator. It is in this sense that the court creates ***264** the rule of the market by way of its application of Section 271, ideally without regard to the benefit received by either party.

Moreover, the court's relinquishment of the decision-making power of parties in the Section 271 trial context precludes the potential for market failure.[36] Symptomized by inefficient allocation of market resources, a market failure occurs when a market participant makes decisions inconsistent with the intuitive cost-benefit determinations to which typical market participants adhere. This market failure causes a breakdown in the efficiency of the allocation of benefit across the market.

Despite no assumption of rationality in the primary market, the assumption is employed in the secondary markets. For the analysis, though, the assumption appears in a much simpler form. Unlike the traditional economic assumption of rationality, which takes into account countless factors and market forces to explain actions by market participants, the knowledge of law assumption assumes only that market participants act based on the knowledge of Section 271's current application. That is, in the Section 271 world, all market participants are aware of and make decisions based on Section 271 and NTP as the real consequence of proceeding into suit and past the settlement stage. The assumption gives the market participants--the patent holder and the alleged infringer--decision-making motive, as they become cognizant of the consequences of proceeding with a Section 271 dispute. This also means that, as the naming might suggest, the secondary markets are offshoots of the primary market because they take their rules from the primary market.

Note that the knowledge of law assumption does not change the reality that the parties do not know with certainty which way a court will rule before such a ruling. While the patent holder knows exactly how the court applies Section 271 to the facts of any particular case, the patent holder is nonetheless uncertain as to the facts of his case, and thus he must conclude going into litigation only that the odds are stacked against him but not insurmountable.

Note that the rationality assumption could well be applied to the court's application of Section 271 to a particular set of facts,[37] but one must take care not to convolute market participants. Here, the patent holder and the alleged infringer are the market participants, and the court creates the market conditions. In that way, the court itself is transparent to the exercise, simply applying Section 271 with no discretion to apply the provision any differently than has previously been done. ***265** Thus, the court's rationality in deciding a Section 271 process patent case is of no consequence to the analysis.

B. If You Do: The Real and Ideal Applications of Section 271 to the Primary Market

As the primary market serves as a predicate for the secondary markets, we must begin the analysis with the former, which gives rise to the knowledge of law in the secondary markets. As the analytical entry point, we must ask what it is that the Section 271 market is trying to achieve before proceeding.

As it stands, the law of Section 271 and NTP follow the all-or-nothing ideology that an alleged infringer is either infringing or he is not based on whether a single step of a patent holder's process was implemented in a different country by the alleged infringer. This extremist, albeit statutorily justified, interpretation of Section 271 leaves a wide range of market outcomes between the poles of infringement and non-infringement. The more numerous these intermediate outcomes, the more possibility there is to find one more suitable to an efficient solution than those offered by either extreme. So while the two-state Section 271 primary market produces outcomes of either infringement or non-infringement, efficiency in the market and the allocation of its benefits is achieved more often through a hypothetical scenario in which the court is not required to make a black-or-white determination of infringement but instead to evaluate the amount of the process infringed award compensation and assign liability accordingly.

To focus on the amount of infringement, as opposed to the categorization of an action as all-infringing or not infringing, is a concept foreign to U.S. patent law. Thus, we can only hypothesize as to its effect. Take, for example, a patented process consisting of ten steps. Assume the alleged infringer implements seven of the steps in the U.S. The alleged infringer then completes the final three steps of the patented process in Canada. Under the current rule, the alleged infringer has not broken the law, and the patent holder has no recourse.

However, suppose the law is changed, and rather than requiring that all steps must take place in the U.S. to incur liability, the court now can find "partial infringement" under which an alleged infringer is held accountable for those steps he carried out in the U.S. Now the alleged infringer is held responsible to the patent holder for the seven steps of patent holder's patented process, or 7/10 of the total process.

Now assume that the last three steps that were completed in Canada involved very little compared to the first seven. Here, the court could assign a relative weighted value to each of the ten steps to determine the extent to which the alleged infringer's usage of the process within the U.S. infringed on the patent holder's total process. As one might conclude from the preceding, more exact and ***266** appropriate results are reached the more precisely one quantifies the values of the steps relative to the entire.

Compare the above evaluation of partial infringement with the current rule. Currently, in the worst case, one can imagine a situation in which an alleged infringer completes all of, say, ninety-nine steps in the U.S. and one step in Canada. The alleged infringer has not infringed, and assuming the steps are all of the same relative weighted value, the system has an efficiency of a whopping one percent! At the opposite extreme, the system yields better, yet still imperfect, results when the alleged infringer carries out only one of one hundred steps in the U.S. While the court still finds no infringement liability, this time the patent holder's process is used much more marginally, resulting in a more trivial violation of his property right in the patented process.

It follows from the above that, as more precise determinations of this partial infringement are made, and proportional judgments are awarded accordingly, the allocative efficiency of the system increases. This is because partial infringement allows us to maximize the benefit to the patent holder while minimizing the reduction in benefit to the alleged infringer. The patent holder is compensated for the exact percentage of the process subject to unauthorized use, and the infringer is assessed liability and pays only for the percentage of the patented process he used. Again, the zero-sum output of the market system requires the benefit of one participant to be reflected in a reduction in benefit to the other participant in equal portion. Thus, assuming partial infringement can be determined to a certain degree of accuracy, the theoretical system achieves results close to optimal allocative efficiency.

C. Secondary Markets: Continuing Unauthorized Use and Settlement

The importance and effects of Section 271 judgments are not limited to situations in which the court hands down a judgment through application of Section 271. Ripples from those determinations, and the observed difficulty involved with successfully prosecuting alleged infringers under Section 271, flow outward from the judgments having unintended consequences in the secondary markets. These unintended consequences are embodied in a sort of cross-market chilling, stifling the actions of participants in the parallel secondary markets.

1. If You Don't: The Effects of the Section 271 Market on Continued Unauthorized

Having established the inefficiency of a court-made determination of infringement with respect to Section 271 under the

current law, and the consequential advantage provided to alleged infringers in Section 271 actions, we can now proceed to determine how the knowledge of Section 271's application shapes the continued unauthorized use market. This market that is created when the patent holder, aware that some portion of his patented process is being used, opts not to file suit because the cost of bringing suit outweighs the potential benefit ***267** or compensation he could gain in court. Note that while the patent holder has knowledge of the law, he is not necessarily aware of the extent to which the alleged infringer's used of the patented process takes place in any one country.

Knowing that bringing a Section 271 action for use that spans two or more countries will result in a favorable outcome for the alleged infringer, the patent holder can make a decision not to file suit. However, if the patent holder is unsure as to the location and extent of all of the alleged infringer's operations, the patent holder may choose to follow through with a suit on the possibility of recovering for a use that might be contained within the U.S.

Naturally, the patent holder's intention is, at the very least, to break even financially. In deciding whether to bring suit or not, there is a threshold cost below which the potential payoff of a suit will not warrant taking the unauthorized user to court. That break-even threshold represents not only the equivalence of cost and benefit to the patent holder, but it also represents the point at which the patent holder turns willing to chance a suit on the limited information to which he has access at the time.

It is this break-even threshold that is influenced by the primary market. As the allocations of compensation and liability become more precise in the Section 271 market, a result enabled by the partial infringement determination, the break-even threshold in this secondary market shifts downward, as a patent holder now sees more value in bringing a Section 271 suit. Weighed against the cost of bringing suit and likelihood of gaining some compensation for the unauthorized use of his patented process, this option seems palatable to the patent holder because he can count on a more incremental, less extreme infringement determination.

On the other hand, under the current rule, which provides only two outcomes, the more probable of which yields unfavorable results for the patent holder, the break-even threshold stays put at its already-high level. Putting a monetary value on his chances of prevailing, the patent holder now sees very little reason to waste his time seeking court intervention on Section 271 liability. So the unintended consequence of the Section 271 primary market on the secondary continued unauthorized use market is to discourage judicial intervention, thus leaving the patent holder no recourse but to grin and bear the unauthorized use of his process.

2. In Between: The Effects of the Section 271 Market on Settlement

Of the three markets, the one represented by settlement of a Section 271 dispute most closely resembles the neoclassical economic market. Here, the parties are free to bargain and create the terms for the allocation of benefits by negotiating the patent holder's compensation between them. Again, although the knowledge of law assumption applies, the patent holder knows only that numbers favor the ***268** alleged infringer, not whether the infringing steps carried out by the alleged infringer took place in the U.S. or abroad.

Because settlement bargaining power is largely determined by what the parties to a settlement know, determining where the infringing steps took place serves as an entry point for addressing this secondary market. What do the parties know, and how does that affect the outcome of a settlement? The only assumption in the secondary markets is that the market participants have knowledge of the law, i.e., the parties know exactly how courts apply Section 271 after NTP. Thus both the patent holder and the alleged infringer are aware that Section 271 determinations largely favor alleged infringers, as certain steps of patented processes are likely to have taken place abroad if Section 271 has been implicated.

Knowledge by both parties of the alleged-infringer-favoring market creates a decreasing and increasing of settlement expectations on the parts of the patent holder and the alleged infringer, respectively. If we imagine a theoretical amount of settlement compensation--we'll call it the settlement compensation floor--below which a patent holder will not agree to settle, the knowledge by the parties about how Section 271 cases play out, effectively lowers that amount. Unlike other settlement contexts, where parties deal on somewhat equal bargaining footings, the parties' knowledge of the law in a Section 271 market skews the bargaining power by lowering the settlement floor.

The reason for this lowering is quite intuitive. The parties, both aware of information detrimental to the patent holder's Section 271 case, enter into settlement negotiations. Although each party cannot be sure that the opposing party has perfect knowledge of the application of Section 271, the parties both have good reason to believe the other is familiar with the

intricacies of the law as it is currently applied. Because the patent holder thinks the alleged infringer has knowledge of the law, he goes into negotiation expecting less than he would otherwise. Likewise, because the infringer has knowledge of the law, he now can enter negotiations with an expectation to compensate the patent holder for less. Thus, the rule of law created in the primary market here again favors the alleged infringer as it did in the previously analyzed secondary market. Whereas the knowledge of law cemented the break-even threshold at a high cost above, here the knowledge of law lowers the settlement compensation floor, thereby reducing the potential compensation available to the patent holder.

D. The Primary Market and Its Spillover Into the Secondary Markets

We have now briefly examined our primary market and the spillover of its rule into the secondary markets. Having established the inefficiency of the current rule of law, what trend can we see across the entire market landscape taken as a whole?

If we take our primary market and our secondary markets each as distinct, mutually exclusive potential outcomes for a patent holder and an alleged infringer, ***269** we see that the patent holder and the alleged infringer end up at one of three different outcomes each with a corresponding market output, i.e., allocation of compensation and liability.

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Figure 2. The Primary and Secondary Section 271 Markets

Of those three outcomes, none favor the patent holder. In our primary market, in which the court applies Section 271 and hands down a judgment pursuant to that application, the patent holder enters the suit with probability working against him. Infringement in the Section 271 context is difficult to show, and chances are that an alleged infringer prevails. Furthermore, the patent holder does not fare better in our secondary markets. The break-even threshold in a market of continuing unauthorized use is increased as the unintended spillover from the primary market, and thus a chilling effect is felt in secondary market activity. The patent holder's knowledge of the improbability of prevailing on a Section 271 claim makes the patent holder more reluctant to enter suit, in turn increasing his break-even threshold and resulting in more of a chance the patent holder takes no action to remedy what he believes he should be compensated for. Settlement also provides less desirable results than in other contexts, as the settlement compensation floor in negotiations has been readjusted to take into account the parties' expectations in settlement negotiations. Because the alleged infringer knows the patent holder's Section 271 claim is likely a weak one, the alleged infringer can use this to settle for far less than would ordinarily be agreed upon.

While our two secondary markets represent the usual alternatives to judicial intervention available to a patent holder, in a Section 271 case, neither one affords the patent holder the opportunity to seek satisfactory compensation from the alleged infringer for the alleged infringer's unauthorized use of the patent holder's patented process. Although a patent holder in a non-Section 271 context might allow continued unauthorized use on a break-even threshold determination that indicated suit was not cost effective, the patent holder in a Section 271 context has his hand forced to accept such an outcome because his chances of prevailing are dramatically lowered. Further, settlement negotiations are far less productive in a ***270** Section 271 context than in other contexts, as the alleged infringer is privy to and can exploit the major weak spot in the patent holder's claim.

V. Conclusion

Since NTP, the law had needed not only clarification, but more extremely, a total reworking. Cardiac Pacemakers worked toward the former, categorically denying process patents protection under Section 271(f), in turn resolving disputes about the definition of "component" with respect to processes. While this step may have made some headway in improving the predictability of international cases, the case has not improved a process patent owner's prospects of remuneration in international use cases. Moreover, the traditional alternatives to proceeding through a trial under Section 271 to a judgment offer little more in the way of benefit to the patent holder, as the rule created in primary market taints the secondary markets by modifying the actions of the participants of those markets. Thus, economically speaking, Section 271 can serve either as an extremely ineffective tool for seeking compensation for allegedly infringed process patents or as a deterrent to seeking help from the judicial system altogether. Times change, and the language or interpretation of 35 U.S.C. § 271 must change as well. Whether by legislative reform or by judicial application, which seems highly unlikely following Cardiac Pacemakers,

action must be taken to provide the owners of process patents recourse for unauthorized use of their intellectual property.

Footnotes

[1] Nicholas Mercuro & Steven G. Medema, Economics and the Law: From Posner to Post-Modernisn and Beyond 45-46 (2d ed. 2006) ("Positive legal-economic analysis describes what is, and there are two strands of this in Law and Economics. One strand attempts to provide a description of the factors and forces governing the determination of economic welfare in society. It involves describing the interrelations between the economy and government and the ongoing reconstruction of the economy vis-à-vis the government....The second branch involves applying economic theory and the tools of econometrics to estimate the direct and indirect impacts of alternative legal doctrines, legal rules, and property rights.").

[2] Id. at 47-48. ("Normative Law and Economics deals with what should be; it is the arena in which legal policy is debated and formulated....The primary question on the normative front concerns the desirability of selecting one law over another based on the efficiency criterion; that is, to what extent should efficiency be the or one of the criteria employed in selecting among alternative legal rules?").

[3] 35 U.S.C. §271(a) (2006) ("[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent."). The Supreme Court has interpreted the existing statute to accord only territorial effect to patent rights and infringement liability. See Brown v. Duchesne, 60 U.S. 183, 195 (1856) (stating that the patent laws "do not, and were not intended to, operate beyond the limits of the United States; and as the patentee's right of property and exclusive use is derived from [the patent laws], they cannot extend beyond the limits to which the law itself is confined").

[4] Patent Law Amendments Act of 1984, Pub. L. No. 98-622, 98 Stat. 3383 (codified as amended in scattered sections of 35 U.S.C.).

[5] 35 U.S.C. §271(f) (emphasis added).

[6] See S. Rep. No. 98-663, at 6 (1984) (explaining the need for a "legislative solution to close a loophole in patent law," and the remedial effect of Section 271(f) on that loophole). See also Deepsouth Packing Co. v. Laitram Corp., 406 U.S. 518, 532-33 (1972) (5-4 decision) (Blackmun, J., dissenting) (dissenting strongly in part because the minority believed Section 271(a) was read so narrowly as to "reward the artful competitor who uses another's invention in its entirety and who seeks to profit thereby"). The court in Deepsouth highlighted the statutory loophole by finding that an alleged infringer who had shipped all of the parts of a patented shrimp deveining machine abroad for assembly had not infringed the patent. Id. at 531 (majority opinion).

[7] 35 U.S.C. §271(f).

[8] Utility patents, the most prevalent type of patents, come in either of two claim forms: apparatus claims and process claims. The claims making up a patented apparatus consist of the apparatus's component parts while the claims making up a patented process consist of the process's component steps. Id. §101.

[9] See James R. Farrand, Territoriality and Incentives Under the Patent Laws: Overreaching Harms U.S. Economic and Technological Interests, 88 J. Pat. & Trademark Off. Soc'y 761, 771-72 (2006) ("The wording and legislative history of Section 271(f) discourage application of that provision to method claims.").

[10] See id. at 777 ("Congress never had the slightest thought, when it enacted Section 271(f), that the 'components' referred to in that provision might extend to disembodied software or other information or instructions.").

[11] Paul Margulies, What's All the Fuss? The "Parade of Horribles" When Applying 35 U.S.C. §271(f) to Software Patents, 14 Cardozo J. Int'l & Comp. L. 481, 483-84 (2006) ("Mechanical devices with concrete components are far simpler to construe in terms of §271(f) than...software[, which] stands out in the general patent scheme because of its long exclusion from

patentability.").

[12] The use of BlackBerries in government operations made the outcome of the case--and the possible discontinuation of Blackberry service--an item of major concern for many. See Associated Press, Settlement Reached in BlackBerry Patent Case, NBCNews.com (Mar. 3, 2006), http://www.nbcnews.com/id/11659304/ #.UUFDEBxwp8E ("The settlement ends a period of anxiety for many of the more than 3 million BlackBerry users in the United States. Uncertainty over the outcome had some customers wondering whether they would experiences [sic] brief outages or even a shutdown.").

[13] 418 F.3d 1282 (Fed. Cir. 2005).

[14] Alejandro Valencia, Inequitable Results in Transnational Patent Infringement Liability: Closing the Method Loophole, B.C. Intell. Prop. & Tech. F., Mar. 26, 2008, at 4-5 (2008) ("Microsoft requested the court rehear NTP... to 'set forth a uniform and consistent body of case law concerning the reach of 35 U.S.C. §271.' Likewise, the government of Canada filed their own amicus brief in support of the rehearing, stating that the longstanding principles of comity and international law had been ignored where they should have been addressed in the appellate opinion. The Canadian Chamber of Commerce followed suit claiming that, as it stood, the rule of law on transnational infringement 'creates confusion for [Canadian] businesses attempting to comply with United States patent law.' Others to file amicus briefs in support of the rehearing were Intel, Seven Networks, Inc. and the Information Technology Association of Canada." (internal citations omitted)).

[15] See id. at 3 (arguing, generally, that force-fitting Section 271(f) to processes spanning international borders produces inequitable outcomes).

[16] NTP, 418 F.3d at 1287-88.

[17] Id.

[18] Id. at 1289-90.

[19] Note that the claims in the NTP patent are complex and beyond the scope of this note. The convention of processes being composed of several simple, elemental steps has been adopted for purposes of our analysis in this note only and does not apply to most patented processes.

[20] Id. at 1318 ("Because a process is nothing more than the sequence of actions of which it is comprised, the use of a process necessarily involves doing or performing each of the steps recited....[E]ach of the asserted method claims...recites a step that utilizes an 'interface' or 'interface switch,' which is only satisfied by the use of RIM's Relay located in Canada. Therefore...these claimed methods could not be infringed by use of RIM's system.").

[21] See 35 U.S.C. §271(f) (2006) (requiring the "combination of such components outside of the United States in such a manner that would infringe the patent if such combination occurred within the United States" (emphasis added)).

[22] NTP, 418 F.3d at 1318.

[23] 576 F.3d. 1348, 1365 (Fed. Cir. 2009).

[24] Donald S. Chisum, Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law, 37 Va. J. Int'l L. 603, 607 (1997).

[25] Rob Kelly, BlackBerry Maker, NTP Ink $612 Million Settlement, CNN Money (Mar. 3, 2006, 7:29 PM),

http://money.cnn.com/2006/03/03/technology/rimm_ ntp/.

[26] NTP, 418 F.3d at 1318.

[27] Kelly, supra note 25.

[28] Chisum, supra note 24, at 607.

[29] NTP, 418 F.3d at 1318.

[30] Id.

[31] Note that the marketplace in which one analyses the Section 271 problem is far from the typical theoretical market employed in neoclassical analysis. As Mercuro states: "The purely competitive, perfectly functioning market has the following characteristics: (i) a large number of buyers motivated by self-interest and making the choices they expect will maximize their utility; (ii) many sellers, also motivated by self-interest, and acting to maximize their profits; (iii) individual buyers and sellers are unable to exert any control over market prices and are thus price takers; (iv) prices serve as the guideposts for decision-makers in the market to (among other things) communicate scarcity; (v) products are standardized (i.e., homogeneous); (vi) there are no barriers to entry or exit, which means that consumers and producers are free to enter or leave all product and factor markets; (vii) all buyers and sellers are fully informed as to the terms of all market transactions; (viii) resources are held in private property with all rights defined and assigned; and (ix) prevailing laws and property rights are fully enforced through the state." Mercuro & Medema, supra note 1, at 20. Despite the atypical or non-classical nature of a Section 271 market, and its imperfect economic nature, its economic examination serves as a valuable academic exercise.

[32] See id. at 21 (defining the main tenets of allocative efficiency as "(i) the extent to which the allocation of inputs within the productive process results in the production of the combination of outputs that best satisfies the economic wants and desires of individuals in society, and (ii) the extent to which the allocation of these outputs across individuals in society generates the highest possible level of social well-being").

[33] Id.

[34] See id. at 102 ("The assumption that economic agents are rational maximizers--that is, they make purposeful choices so as to pursue consistent ends using efficient means--stands as a cornerstone of modern economic theory"). The assumption of rationality is often employed in the Chicago school of thought in economic analyses.

[35] Id.

[36] See id. at 102-03 (noting that market failure occurs when producers and consumers, trying to maximize profit and utility, respectively, ineffectively weight the marginal benefits and costs).

[37] Assuming rationality on the part of the court in the economical analysis of a particular case would make the most sense where the court seeks to arrive at a particular outcome so as to set forward-thinking precedent. Then, the court's actions can be seen as rational. Without a motive, however, no choice is rational.