

**The Doctrine of Equivalents under United States Patent  
Law**

**By**

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## **Abstract**

The present paper address the history, modern state, and empirical evidence for the evolution of the doctrine of equivalents in United States Patent Law. In addition, the paper presents an overview of the main critical nuances of the modern doctrine of equivalents raised by scholars. Finally, the author concludes the close interconnection of the doctrine of equivalents with the claim construction doctrine based on their shared history and empirical analysis of the case outcomes.

## I. Introduction

The doctrine of equivalents is a doctrine that expands the scope of protection beyond the construed claim language of a patent. The Court developed the doctrine since *Winans v. Denmead*<sup>1</sup> 1853. The doctrine was evolved from the claim construction doctrine, and only in 1950, with *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*<sup>2</sup> case it acquired a qualitatively distinct meaning. In 1950, the Court decided to radically expand the literal scope of protection by means of the doctrine of equivalents. Therefore, since that time, "[n]o doctrine invested in the Federal Circuit has produced more angst, controversy, or expense than the doctrine of equivalents."<sup>3</sup> Despite the long history and powerful influence of the cases' outcome, the doctrine of equivalents has not been codified in any of the Patent Acts. This fact adds additional points to the variety of critical comments the doctrine of equivalents provokes.

However, recent studies show that the doctrine of equivalents experiences a significant decline starting from the middle of the 1990s.<sup>4</sup> Some researchers thought that this decline puts under the risk the entire existence of the doctrine.<sup>5</sup> Though, it might not be the case as the data shows that the patents related to the recently emerged technology may revive the doctrine implementation.<sup>6</sup> Overall, the history and future of the doctrine of equivalents presents an interesting subject for studying both for patent practitioners and scholars.

The main body of the present paper is divided into three parts. Part II provides an overview of the history of the doctrine of equivalents, Part III discusses the standards and limitations of the modern doctrine of equivalents, and Part IV is devoted to the empirical evidence for the evolution of the doctrine.

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<sup>1</sup> 56 U.S. (15 How.) 330 (1853).

<sup>2</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. (1950).

<sup>3</sup> Michael J. Meurer & Craig Allen Nard, *Invention, Refinement, and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1948-49 (2005)

<sup>4</sup> John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STANFORD LAW REV. 955-984 (2007), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=956611](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=956611); Lee Petherbridge, *On the Decline of the Doctrine of Equivalents*, 31 Cardozo Law Rev. 1371-1405 (2010), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1598549](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1598549); David L Schwartz, *Explaining the Demise of the Doctrine of Equivalents*, 26 Berkeley Technol. Law J. 1157-1216 (2011), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1688497](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1688497); Daryl Lim, *The (Unnoticed) Revitalization of the Doctrine of Equivalents*, St. Johns. Law Rev. (2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3744557](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3744557).

<sup>5</sup> Schwartz, *supra* note 4.

<sup>6</sup> Lim, *supra* note 4.

## II. Brief History

This section aims to provide a historical overview of the patent system evolution in light of the fundamental aspects addressed by the doctrine of equivalents. The author highlights three fundamental aspects that the doctrine of equivalents addresses: public notice, language interpretation, and after-arising technologies. All three factors, either way, refer to the definition of the scope of protection covered by a patent. When empowering the inventor with exclusive rights on the patented invention, the society expects to obtain a certain level of clarity in return. Clarity and certainty create a comfortable environment for further progress of innovations. It becomes clear for innovators and technology users which inventions can be used without permission and undermine obtaining of authorization.

The following historical retrospective demonstrates how the patent system encountered the scope of protection issues and how it addressed them. Part A sheds some light on how the appearance of claims influences the scope of protection. Then, Part B discusses the evolution and tight connection of the claim construction doctrine and the doctrine of equivalents. Finally, Part C concludes the section.

### A. 1790-1870. Establishment of the Patent System and Appearance of Practice to Claim an Invention

Following the appearance of the patent law rudiments on the state level, the history of the federal patent system starts with Article I, Section 8 of the Constitution of the United States. "The Congress shall have Power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."<sup>7</sup> The first Patent Act appeared soon after the Constitution and required applicants to provide the responsible authorities with a "specification ... so particular ... as not only to distinguish the invention or discovery from other things before known and used, but also to enable a workman ... skilled in the art ... to make, construct, or use the same, to the end that the public may have the full benefit thereof after the expiration of the patent term."<sup>8</sup> A typical patent application of that time comprised an ancestor of what practitioners currently call a specification and possibly accompanying drawings disclosing an invention.

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<sup>7</sup> The Constitution of the United States, Article 1, Section 8.

<sup>8</sup> Act of April 10, 1790, ch. 7, § 2, 1 Stat. 109.

Soon after the launch, the patent system entailed its fundamental question of what constitutes the scope of protection. Society experienced a lack of certainty as the patent specification did not provide the public with a clear notice about precisely what the inventor considers his/her invention and, consequently, what is protected by the patent. The Supreme Court addressed this question in *Evans v. Eaton*<sup>9</sup> by encouraging inventors to clearly state in their applications the scope of the invention which the patent protection would cover.<sup>10</sup> The ruling of this case was codified in the 1836 Patent Act. However, by that time, patent practitioners already established an ahead-of-the-curve tradition to include summary language at the end of the specification, which by 1840, after a sequence of court decisions (e.g., *Wyeth v. Stone*<sup>11</sup> and *Prouty v. Ruggles*<sup>12</sup>), finally evolved into a peripheral claiming practice.<sup>13</sup> In other words, the claiming language drew a boundary between protected and unprotected subject matter, leaving everything disclosed in the specification but not claimed outside the scope of protection.

Nevertheless, claims did not manage to solve the problem with the scope of protection completely. The challenge was that the claims remained to be words, and consequently, the scope of protection became independent from the interpretation of the claim language. In 1853 the Court in *Winans v. Denmead*<sup>14</sup> applied a liberal construction of a claim's language to include equivalents that were known to be a substitute for the invention described in the patent specification.<sup>15</sup> This decision is considered by many as the birth of the doctrine of equivalents.<sup>16</sup>

Following the established practice, in 1870, Congress included the requirement to "particularly point out and distinctly claim the part, improvement, or combination which [the applicant] claims as his invention or discovery"<sup>17</sup> in the amended Patent Act.

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<sup>9</sup> 20 U.S. (7 Wheat.) 356 (1822).

<sup>10</sup> Joshua D Sarnoff, *The Historic and Modern Doctrines Of Equivalents and Claiming the Future : Part I ( 1790-1870)* (2004).

<sup>11</sup> 30 F. Cas. 723 (C.C.D. Mass. 1840) (No. 18,107).

<sup>12</sup> 41 U.S. 336 (1842).

<sup>13</sup> Sarnoff, *supra* note 10.

<sup>14</sup> 56 U.S. (15 How.) 330 (1853).

<sup>15</sup> Sarnoff, *supra* note 10.

<sup>16</sup> *Id.*; Schwartz, *supra* note 4; Lim, *supra* note 4.

<sup>17</sup> Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198, 201.

## B. 1870-1950. Evolution of Claim Language Construction

The next period from 1870 to 1950 was quite intense on case law. During these years, the Court continuously developed the claim interpretation practice. The practice primarily addressed the claim construction doctrine, though the doctrine of equivalents was also evolved.

In general, according to the claim construction doctrine, claims are construed from the perspective of a person having ordinary skill in the art (PHOSITA) at the time of the invention based on the ordinary meaning of the claim language, specification, and in rare cases, prosecution history and extrinsic evidence. The requirement to distinctly claim an invention served as a leitmotif for the court decisions. The Court regularly highlighted that the construed claim language limits the scope of patent protection.<sup>18</sup>

Nevertheless, the practice found another way to broaden the scope of protection for so-called pioneering inventions. The allowance of the functional claiming language<sup>19</sup> in 1876 allowed expanding the claim interpretation. Simultaneously, this approach was fully compliant with the earlier Court's practice to limit the scope of protection by the application's claim language. The functional claim language made it possible to cover even those embodiments that were not directly disclosed in the specification.<sup>20</sup> Furthermore, the functional claim language provided applicants of pioneering inventions to some extent claim future arising substitutes of the claimed elements.<sup>21</sup> For improvement invention, this option of broad claim construction was not permitted until *Eibel Process Co. v. Minnesota & Ontario Paper Co.*<sup>22</sup> decision in 1923.

To avoid the detrimental effect of pioneering inventions on the subsequent innovations, the liberal interpretation of the functional claim language was counterbalanced by numerous restrictions and limitations such as the reversed doctrine of equivalents<sup>23</sup>, enablement and definitiveness requirements<sup>24</sup>.

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<sup>18</sup> Sarnoff, *supra* note 10.

<sup>19</sup> *Cochrane v. Deener*, 94 U.S. (4 Otto) 780, 787 (1876)

<sup>20</sup> Joshua D Sarnoff, *The Historic and Modern Doctrines Of Equivalents and Claiming the Future: Part II (1870-1952)*, Forthcom. J. Pat. Trademark Off. Soc. (2004).

<sup>21</sup> *Edison Elec. Light Co. v. Boston Incandescent Lamp Co.*, 62 F. 397, 398-99 (C.C.D. Mass. 1894).

<sup>22</sup> 261 U.S. 45 (1923).

<sup>23</sup> *Boyden Power Brake Co. v. Westinghouse*, 170 U.S. 537 (1898).

<sup>24</sup> *Dolbear v. American Bell Telephone Co.*, 126 U.S. 1 (1888); *Morley Sewing Machine Co. v. Lancaster*, 129 U.S. 263 (1889); *Holland Furniture Co. v. Perkins Glue Co.*, 277 U.S. 245 (1928).

The reversed doctrine of equivalents states that even in a later-arising technology seems to be infringing the construed claim language of a given patent, it might appear to be not an infringement if the later-arising technology went far from the principle of the patented invention. In *Boyden Power Brake Co. v. Westinghouse*, the Court says:

"We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided .... The converse is equally true. The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent...."<sup>25</sup>

By applying the enablement requirement, the Court was also targeted to limit possibilities to include later-arising technologies when interpreting the claims. The Court restricted applicants from including overly broad functional embodiments in the specification: "If the description be so vague and uncertain that no one can tell, except by independent experiments, how to construct the patented device, the patent is void."<sup>26</sup>

At the exact moment, the Court introduced the definitiveness requirement to prohibit the claim language that a person skilled in the art can not clearly define in light of the accompanying specification.

### **C. Conclusion**

To sum up, it is worth mentioning that up until 1950, the Court's decisions were guided by the distinct claiming requirement stated in the 1870 Patent Act, and that the construed claim language defined the scope of patent protection. Nevertheless, in the author's opinion, it is impossible not to notice the gradual attempts to expand the scope, yet only via various linguistic methods. The following section will show how the Court went beyond the framework set by the language constraints.

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<sup>25</sup> *Boyden Power Brake Co. v. Westinghouse*, 170 U.S. at 568, 571 (1898).

<sup>26</sup> *Morley Sewing Machine Co. v. Lancaster*, 129 U.S. 472, 474 (1889).



### III. Modern Doctrine of Equivalents

Before 1950 the history of the doctrine of equivalents closely intertwined with the claim construction doctrine. Limitations invoked by the 1870 Patent Act did not allow the scope of protection to go far beyond the construed claim language and known equivalents to the disclosed embodiments.<sup>27</sup> The formation of the modern doctrine of equivalents is traditionally referred to *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*<sup>28</sup> case. In *Graver Tank*, the Supreme Court breathed new life into the historical doctrine by giving it the power to extend "protection beyond the scope of application of construed claim language."<sup>29</sup> Following this sharp swing of the patent system status, balancing motions periodically alternated by jumps towards the doctrine extension<sup>30</sup> leading the system to a qualitatively new equilibrium.

Part A of this section sets the main principle of the modern doctrine of equivalents given its historical background and overviews the main points of criticism regarding the current state of the doctrine. Part B discusses the standards currently implemented by courts to invoke the doctrine of equivalents. Part C explains the limitations of the doctrine. Finally, Part D concludes the section.

#### A. Main Principle

The main idea of the modern doctrine of equivalents was expressed by the Court in *Graver Tank* decision: "[T]o permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing. . . . leav[ing] room for—indeed encourag[ing]—the unscrupulous copyist to make unimportant and insubstantial changes."<sup>31</sup> In other words, the Court suggests making a step towards expanding the scope of protection beyond the literal meaning of the claim language and consequently beyond the construed claims. It worth mentioning that the "[i]ntent [to copy] plays no role in the application of the doctrine of equivalence."<sup>32</sup> This approach indeed has a logical explanation as the patent protects an invention, and the invention is a "thing," not the words describing it.<sup>33</sup>

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<sup>27</sup> Sarnoff, *supra* note 20.

<sup>28</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, *supra* note 2.

<sup>29</sup> Sarnoff, *supra* note 20.

<sup>30</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997), and *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002).

<sup>31</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S., 607 (1950).

<sup>32</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. (1996).

<sup>33</sup> John F. Duffy, *The festo decision and the return of the supreme court to the bar of patents*, *Supreme Court Rev.* 273–341 (2002).

Nevertheless, the application of the modern doctrine of equivalents conflicts with the public notice function guaranteed by the requirement to distinctly claim an invention.<sup>34</sup> Indeed, how the public could know which technology they can use without an inventor's permission if what is claimed as an invention is not what it literally means. The doctrine of equivalents blurs the line intended to be drawn by the concept of peripheral claims, creating additional legal uncertainty.

Additionally, in *Warner-Jenkinson*,<sup>35</sup> the Court clarified that equivalents should be determined by Court at the time of infringement. This critical clarification expanded the scope of protection under the doctrine of equivalents to include the later-arising technologies not disclosed in the specification.

The modern doctrine of equivalents is frequently criticized.<sup>36</sup> Opponents of the doctrine argue that the doctrine is not directly supported by the amended Patent Act's language<sup>37</sup> adopted in 1952. The doctrine challengers also highlight that the Patent Act teaches away by stating that claims should distinctly draw the line between the protected invention and the rest. For those applicants, who for some reason, failed to claim what they had a right to claim, Congress provided a mechanism of reissuance of patents.<sup>38</sup>

Indeed, only section 112(f) mentions equivalents "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and *equivalents* thereof [emphasis added]." However, referring back to the history of the doctrine between 1870 and 1950, it becomes clear that the legislator meant to authorize the functional claiming language and the principle of construing the claim language to include equivalents to the embodiments disclosed in the specification and known on the date of filing the application. This approach is very well harmonized with the practice developed by the case law before *Graver Tank*<sup>39</sup>.

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<sup>34</sup> Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198, 201.

<sup>35</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, *supra* note 32.

<sup>36</sup> Joshua D. Sarnoff, *Abolishing the Doctrine of Equivalents and Claiming the Future After Festo*, 19 Berkeley Technol. Law J. 1157–1225 (2004).

<sup>37</sup> Patent Act of July 19, 1952, ch. 950, Pub. L. No. 82-593, ch. 950, 66 Stat. 798-99 (currently codified at 35 U.S.C. § 112 (2013))

<sup>38</sup> 35 U.S.C. 251 Reissue of defective patents.

<sup>39</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, *supra* note 2.

The modern doctrine of equivalents expands the patent scope delineated by the construed claims, even further compared to the functional claims covering, apart from the scope supported by the description, the "equivalents thereof"<sup>40</sup> on the effective filing date. The doctrine opponents highlights "[h]ad Congress intended to approve of such a major change to direct infringement law, it certainly would have said something to this effect."<sup>41</sup>

Nevertheless, the Court has not only ignored this discrepancy but, on the contrary, upheld the modern doctrine of equivalents in the subsequent decisions *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*<sup>42</sup>, and *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*<sup>43</sup> and has even expanded it.<sup>44</sup>

## B. Standards

There are two major standards or tests that can invoke the doctrine of equivalents set forth by the case law. The "function-way-result" test was established in *Graver Tank* case. The test examines whether the accused technology "performs substantially the same function in substantially the same way to obtain the same results."<sup>45</sup> The "insubstantial differences" test states "the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes."<sup>46</sup> The Supreme Court left the question to decide which test to apply to the lower courts based on the facts of the considered case, e.g., the patent's linguistic framework. In recent case, *Mylan Institutional LLC v. Aurobindo Pharma Ltd.*<sup>47</sup>, the Federal Circuit recommends applying the insubstantial differences test for chemical and biotechnological cases.

## C. Limitations

As it was already pointed in the previous section, when applied broadly, the doctrine of equivalents may conflict with the public notice function<sup>48</sup> and distinct claiming requirement. The reconciliation with the existing limiting doctrines such as prosecution history estoppel and development of other

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<sup>40</sup> 35 U.S.C. § 112 (2013)

<sup>41</sup> Sarnoff, *supra* note 1 at 6.

<sup>42</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 1 (1996).

<sup>43</sup> *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 7 (2002).

<sup>44</sup> Sarnoff, *supra* note 20.

<sup>45</sup> *Graver Tank & Mfg. Co. v. Linde Air PRODS. Co.*, *supra* note 5, 608-10.

<sup>46</sup> *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1518 (Fed. Cir. 1995).

<sup>47</sup> *Mylan Institutional LLC v. Aurobindo Pharma Ltd.*, 2017-1645 (Fed. Cir. 2017)

<sup>48</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, *supra* note 32.

specific limitations were needed. A list of limitations applied by the Court when implementing the modern doctrine of equivalents is presented below.

### *All Elements Rule*

The rule states that "[e]ach element contained in the 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."<sup>49</sup> In other words, the rule requires element-by-element determination of equivalency and restrict implementation of the doctrine to the invention as a whole. Another important restriction of the rule "ensure[s] that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element."<sup>50</sup> All elements of the patented invention are material and should be present in literal or equivalent form in the accused device or a process. This rule imposes a limitation on the scope of protection expansion.

### *Amendment-based prosecution history estoppel*

This long-standing limitation, when applied for the doctrine of equivalents, prevents applicants from claiming a narrow scope of protection for prosecution purposes in the USPTO and later expanding the scope of protection for seeking an infringement.

In the *Warner-Jenkinson*<sup>51</sup> decision, the Court set a strict rule of triggering the estoppel. The estoppel must have been applied when a claim amendment was related to patentability, i.e. to avoid prior art, statutory subject matter questions, practical utility and enablement requirements.<sup>52</sup> If the applicant failed to find in the prosecution files a reason indicating that the amendment was not patentability-related, then it automatically counted as such. And even if the amendment was not patentability-related, but the Court found the reason for the amendment insufficient, then, again, the prosecution history estoppel bars the doctrine of equivalents. In addition, the burden of proof lies on the patent holder.

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<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> Sarnoff, *supra* note 36.

Later, in the *Festo*<sup>53</sup> case, the approach in relation to the patentability-related amendments was softened, and instead of the rule that a patentability-related amendment "must" trigger the prosecution history estoppel, the Court changed it on "may" trigger the estoppel. If (i) equivalents have tangential relation to the reason of the amendment, or (ii) amendments relinquish unforeseeable and "beyond fair interpretation" equivalents, the estoppel may not bar the doctrine of equivalents application. However, "(..) if the alleged equivalent were known in the prior art in the field of the invention, it certainly should have been foreseeable at the time of the amendment."<sup>54</sup>

#### *Argument-based prosecution history estoppel*

The argument-based prosecution history estoppel has similar logic as the prosecution history estoppel. It prevents the applicant from expanding the scope of protection by including a subject matter that, based on the arguments presented to the patent office, was clearly left out of the scope.

#### *Prohibition against a scope of equivalents that encompasses subject matter disclosed but not literally claimed in a patent specification*<sup>55</sup>

The logic of this limitation is the following. If an applicant fails to claim a subject matter, then it automatically goes to the public domain. The applicant cannot recapture the subject matter from the public domain by any means, including the doctrine of equivalents.

#### *Prohibition against a scope of equivalents that encompasses prior art*<sup>56</sup>

*Wilson Sporting Goods Co. v. David Geoffrey & Assocs.* additionally highlights the impossibility of restoring a subject matter from the public domain. In other words, the scope of equivalents is limited by the existing at the effective filing date state of the art. However, this limitation does not preclude from including in the scope of protection equivalents that appear after the effective filing date.

#### *Specification Disclaimer*<sup>57</sup>

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<sup>53</sup> *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, *supra* note 43.

<sup>54</sup> *Id.*

<sup>55</sup> *Petherbridge*, *supra* note 4; *Johnson & Johnston Assocs. v. R.E. Serv. Co.*, , 285 F.3d 1 (2002).

<sup>56</sup> *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, , 904 F.2d 6 (1990).

<sup>57</sup> *Gaus v. Conair Corp.*, , 363 F.3d 1 (2004).

This limitation also protects the public notice function. If an applicant disclaims a subject matter in the specification from the scope of protection, then the decision is deemed to be made, and the doctrine of equivalents cannot change this decision during the infringement prosecution.

## **D. Conclusion**

To sum up, the modern doctrine of equivalents remains to be a controversial topic among scholars. The doctrine has not found its place in the Patent Act and therefore remains a court-made doctrine. Nevertheless, over several decades the Court actively developed the doctrine, gradually introducing its extensions and limitations.

## **IV. Empirical Evidence for Evolution**

This section provides an overview of empirical evidence for the evolution of the doctrine of equivalents. There are four subsequent empirical studies conducted by different scholars in 2007<sup>58</sup>, 2010<sup>59</sup>, 2011<sup>60</sup>, and 2020<sup>61</sup>.

### **A. The Decline of the Doctrine of Equivalents**

All four abovementioned studies reveal a steady decline of the doctrine of equivalents starting between the mid-1990s and the mid-2000s. By the decline, the authors mean a negative trend of patentees' success to win the infringement case based on the doctrine of equivalents arguments that to some extent motivates patent holders to devote less space to the doctrine in their arguments.

The studies investigate the reasons for the doctrine decline. They consistently conclude that the decisive influence is not on the side of the limitations imposed on the doctrine but instead on the side of procedural changes that happened in the second half of the 1990x. Referring to the previous empirical studies, *Schwartz*<sup>62</sup> provides a complete interpretation and solid reasoning for the observed decline depicted in figure 1.

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<sup>58</sup> Allison and Lemley, *supra* note 4.

<sup>59</sup> Petherbridge, *supra* note 4.

<sup>60</sup> Schwartz, *supra* note 4.

<sup>61</sup> Lim, *supra* note 4.

<sup>62</sup> Schwartz, *supra* note 4.

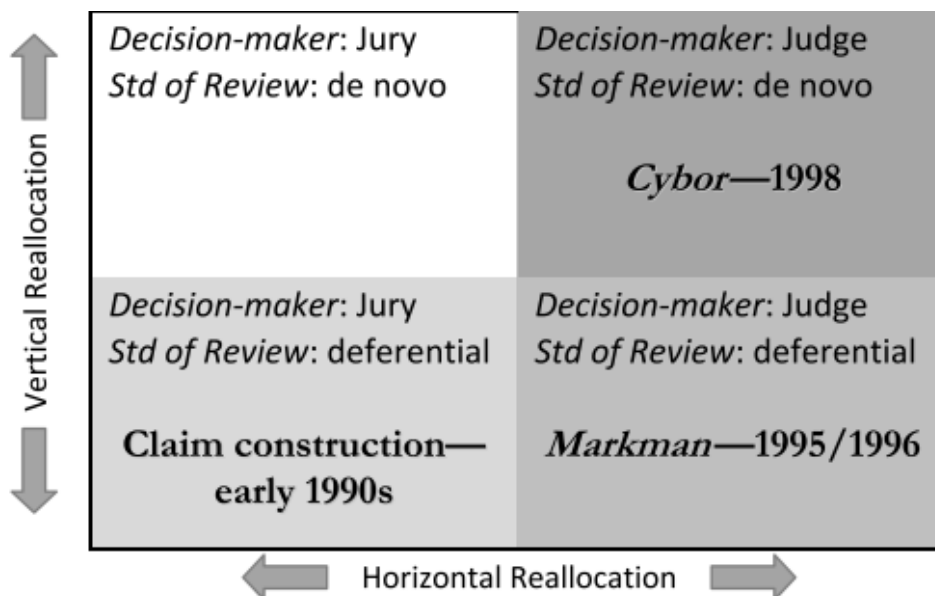
Figure 1: Explaining the demise of the doctrine of equivalents<sup>63</sup>

Figure 1 demonstrates the increasing importance of the claim construction doctrine. At first, *Markman v. Westview Instruments, Inc.*<sup>64</sup> case shifted the decision-making from jury to a judge<sup>65</sup>. Soon after that, the Federal Circuit in *Cybor Corp.*<sup>66</sup> empowered the appellate Court to decide the claim construction *de novo*.<sup>67</sup> These major shifts made the claim construction doctrine extremely important in the course of patent litigation.<sup>68</sup> Referring back to history, it is worth mentioning that the doctrine of equivalents has common roots with the claim construction doctrine. This fact is especially visible based on the analysis of the case law development between 1870 and 1950. *Schwartz* confirms this observation by pointing out that as "(...)both doctrines are essentially substitute ways for the court to evaluate the proper reach of an invention"<sup>69</sup>, the doctrine of equivalents was dominated over by the more important claim construction doctrine.

<sup>63</sup> *Id.*, p. 1171 Figure 3.

<sup>64</sup> *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), aff'g 52 F.3d 967 (Fed. Cir. 1995).

<sup>65</sup> John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 *Stanford Law Rev.* 955–984 (2007), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=956611](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=956611); David L. Schwartz, *Explaining the Demise of the Doctrine of Equivalents*, 26 *Berkeley Technol. Law J.* 1157–1216 (2011), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1688497](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1688497); *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), aff'g 52 F.3d 967 (Fed. Cir. 1995).

<sup>66</sup> *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc).

<sup>67</sup> Schwartz, *supra* note 4.

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*, p. 1160.

Referring to the limitations imposed on the doctrine of equivalents by the Court in a series of subsequent cases *Wilson Sporting Goods*<sup>70</sup> (1990), *Warner-Jenkinson*<sup>71</sup> (1996), *Johnson & Johnston* (2002), *Festo*<sup>72</sup>(2002), *Gaus*<sup>73</sup> (2004), they did not play a significant role in the decline of the doctrine of equivalents.<sup>74</sup> Though the major procedural change appeared in *Markman*<sup>75</sup> and significant limitations presented in *Warner-Jenkinson*<sup>76</sup> happened so close to one another that it became complicated to separate their negative influence on the doctrine of equivalents.<sup>77</sup> Petherbridge notes that the Federal Circuit actively used the doctrine of equivalents limitations as an instrument for reversing judgments on equivalents<sup>78</sup> and consequently stimulating the lower courts to favor the claim construction doctrine.

## **B. The Recent Indication of Revitalization**

Nevertheless, Professor Lim's recent study discovers a slight revitalization of the doctrine of equivalents on the Federal Circuit level (Figure 2).<sup>79</sup> However, indications of revival on the district court level are still invisible (Figure 3).

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<sup>70</sup> *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, *supra* note 56.

<sup>71</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, *supra* note 32.

<sup>72</sup> *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, *supra* note 43.

<sup>73</sup> *Gaus v. Conair Corp.*, *supra* note 57.

<sup>74</sup> Petherbridge, *supra* note 4; Allison and Lemley, *supra* note 4.

<sup>75</sup> *Markman v. Westview Instruments, Inc.*, 517 U.S. 3 (1996).

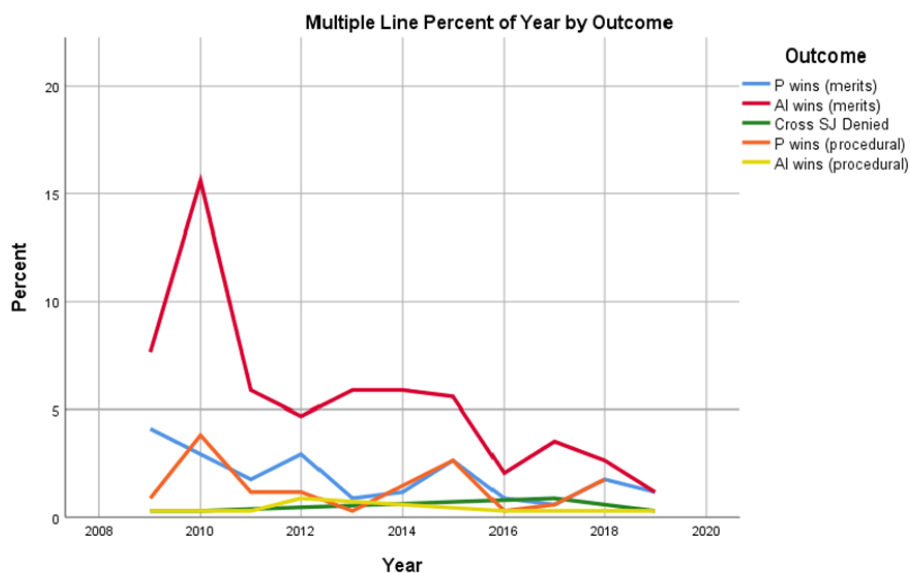
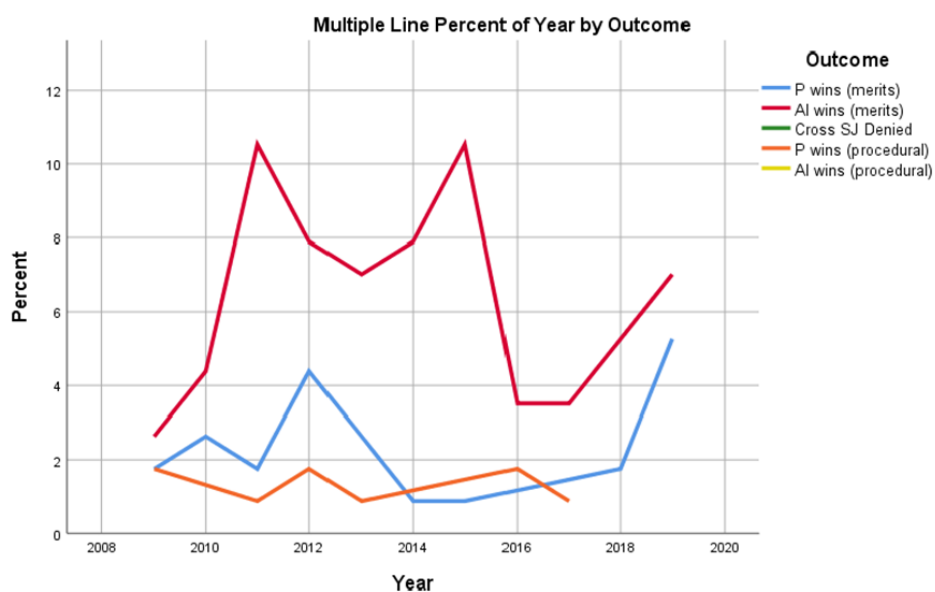
<sup>76</sup> *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, *supra* note 32.

<sup>77</sup> Allison and Lemley, *supra* note 4.

<sup>78</sup> Petherbridge, *supra* note 4.

<sup>79</sup> Lim, *supra* note 4.



Figure 2: Overall Wins over Time (Federal Circuit)<sup>80</sup>Figure 3: Overall Wins over Time (District Court)<sup>81</sup>

The author explains such change of the course by the significant technological shift that occurred within the last ten years. Computer-related and drug and medical inventions significantly dominate over the mechanical inventions that held stronger positions ten years ago.<sup>82</sup>

<sup>80</sup> *Id.*, p. 28, Figure 3.

<sup>81</sup> *Id.*, p. 28, Figure 2.

<sup>82</sup> *Id.*

## C. Conclusion

The evolution of the modern doctrine of equivalents was thoroughly investigated by scholars. In author's opinion, the conclusions of their studies are well compliant with the historical background of the doctrine. From the very beginning, the claim construction doctrine was considered as the main instrument in defining the scope of protection. Therefore, the decline of the doctrine was viewed as a partial recovery of the patent system after the controversial *Graver Tank*<sup>83</sup> decision. However, the recent data<sup>84</sup> shows that this is not yet the end of the doctrine of equivalents journey in the patent system of the United States.

## Conclusion

The overview presented in this paper covers the main aspects of the evolution of the doctrine of equivalents: history, modern state, and empirical evidence of the doctrine's development over time. The complex overview shows the core logic behind the doctrine of equivalents: scope of protection expansion beyond the construed claim language mainly to include future-arising technology and overcome the language constraints. It is also visible how the doctrine of equivalents originated from and closely connected with the claim construction doctrine. Surprisingly, after many years of independent development, the doctrine of equivalents is considered by judges as almost entirely covered by the claim construction doctrine. However, new technological fields may give the doctrine of equivalents a second chance to show its decisive power in patent litigation disputes.

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<sup>83</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, *supra* note 2.

<sup>84</sup> Lim, *supra* note 4, p. 28, Figure 3.

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