ABSTRACT

It is a tradition in patent drafting to refer to one or more examples as “preferred” or as a “preferred embodiment.” While these “preferred embodiments” reside in the specification, they can influence the interpretation of the claims. The role of preferred embodiments in claim construction was the issue in two cases, *Laitram Corp. v. Cambridge Wire Cloth Co.* and *Vitronics Corp. v. Conceptronic, Inc.* These cases represent two different lineages of the case law that refer to preferred embodiments, where application of these cases broadens (or prevents narrowing of) claim scope. *Laitram* warns against confining the claim to a specific example disclosed in the specification, where the example is a preferred embodiment. *Vitronics* warns that the claims should not be interpreted in a way that excludes the preferred embodiment. Where an example is labeled as “preferred,” this labeling almost always works to the advantage of the patentee during litigation. But, this labeling can also backfire against the patentee, resulting in claim invalidation. Two arguments can turn the preferred embodiment against the patentee. The first causes the claim to fall under the scope of the prior art, resulting in invalidation under 35 U.S.C. § 102. The second invokes the best mode requirement, thereby demanding a high degree of enablement under 35 U.S.C. § 112. Where a high degree of enablement is required, it can raise the question of validity for lack of enablement.
PREFERRED EMBODIMENTS IN PATENTS

TOM BRODY*

INTRODUCTION

Patents contain two sections, the specification and the claims.1 The claims identify the legal boundaries of the intellectual property, while the specification contains background information useful for interpreting the claims and for providing guidance for making and using the claimed invention.2 Mainstream concerns for patent drafters include determining the persons to be named as inventors,3 determining the date of conception and the patent's priority date,4 drafting working and prophetic examples for the specification,5 duty to disclose,6 foreign filing strategies,7 and claim drafting.8 This article concerns claim construction and focuses exclusively on the role of preferred embodiments in claim construction. Claim construction, a task that occurs during litigation, must occur before the court

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2 Id.
evaluates the claim-invalidating effects of prior art publications, and before the court determines if an accused infringer had actually infringed the claims.\(^9\) The Federal Circuit's flow chart (or decision tree) used for claim construction is detailed in the author's article in *Virginia Journal of Law and Technology*.\(^{10}\)

I. THE EARLIEST PREFERRED EMBODIMENT

Labeling one or more examples in the specification as "preferred" is an old tradition in the patent drafting art.\(^{11}\) In the earliest years of U.S. patents, the term "preferred" or "preferable" occurs in the patent specification at intervals of every 20-40 patents (Appendix One).\(^{12}\) A number of nineteenth century cases from the U.S. Supreme Court, dealing with patents, have equated the terms "preferred," "preference," or "preferable" as meaning non-essential or merely a recommendation.\(^{13}\) For example, *Russell v. Dodge* found that preferable has the meaning of, "mere adjuncts which may be used or abandoned at pleasure."\(^{14}\) Several opinions from nineteenth century patent cases from the U.S. District Courts have also characterized these terms in this same way.\(^{15}\)

In recent times, the term "preferred embodiment" has occurred in 55–73% of all patents.\(^{16}\) This article discloses that labeling an example as "preferred" or as a "preferred embodiment" enables the patentee to make use of two bodies of case law, as represented by *Laitram Corp. v. Cambridge Wire Cloth Co.*,\(^{17}\) and *Vitronics v. Conceptronic, Inc.*\(^{18}\) These two cases provide the patentee with two distinct arguments for maintaining or broadening claim scope.\(^{19}\) In other words, the simple


\(^{11}\) See, e.g., Machine for Manufacturing Silver Spoons, U.S. Patent No. 26 (issued Sept. 20, 1836) ("The short roller with but one cutter upon it will be preferable.") (emphasis added).

\(^{12}\) See infra app. One.


\(^{14}\) 93 U.S. at 462.


\(^{16}\) The percentage of issued patents containing the term preferred embodiment(s) from the years 1980 to 2005 are as follows. The dates are the priority date (not the date of allowance or issue). 55% (1980), 57% (1981), 58% (1982), 60% (1983), 61% (1984), 62% (1985), 63% (1986), 63% (1987), 65% (1988), 67% (1989), 70% (1990), 69% (1991), 70% (1992), 71% (1993), 70% (1994), 72% (1995), 72% (1996), 75% (1997), 72% (1998), 72% (1999), 68% (2000), 66% (2001), 65% (2002), 62% (2003), 59% (2004), and 58% (2005). These numbers were determined using the STN program available from the American Chemical Society and the USPatfull database.

\(^{17}\) 863 F.2d 855 (Fed. Cir. 1988).

\(^{18}\) 90 F.3d 1576 (Fed. Cir. 1996).

\(^{19}\) See *Laitram*, 863 F.2d at 865 (expanding the scope of the claim beyond the preferred embodiment); *Vitronics*, 90 F.3d at 1583 (asserting that the preferred embodiment must be consistent with the claims).
expedient of including the word "preferred" in a patent, together with application of one of these often-cited cases, can persuade a court to broaden claim scope, to the advantage of the patentee.20

Where the word "preferred" is included in a patent, the word is typically placed within commentary about one or more examples.21 Alternatively, or in addition, inventors may include the term "preferred" in the title of a section within the patent, where the title reads, e.g., "DETAILLED DESCRIPTION OF THE PREFERRED EMBODIMENT" or "DETAILLED DESCRIPTION OF THE PREFERRED EMBODIMENTS."22 To provide an example, Reissue Patent RE 30,341 was the subject of Laitram Corp. v. Cambridge Wire Cloth Co.23 The terms "preferred" and "preferably" occurred 13 times in the specification of RE 30,341.24 The context of one of these instances is as follows:

Although other noncircular cross sections such as hexagonal may be employed, the square cross section is preferred because it provides maximum strength coupled with maximized driving force-imparting surfaces and corners, is symmetrical with respect to the rotational axis and lends itself to fabrication simply and easily of a variety or combination of materials.25

II. THE NATURE OF THE PROBLEM

In construing patent claims, the lower courts sometimes make the mistake of unjustly limiting a claim to require certain features of one of the written examples of the invention, as found in the specification.26 The result is undue narrowing of claim scope.27 This practice of limiting claims generally works to the advantage of the accused infringer, and to the disadvantage of the patentee.28 The term "mistake," as used here, rests on the fact that the Federal Circuit had reversed the narrow claim construction of the lower court in the cited cases.29 The term "mistake" also rests on the Federal Circuit's characterization of the mistake as a common one.30 The Federal Circuit has characterized the practice as "a classic attempt to limit the scope of a

20 See Laitram, 863 F.2d at 865 (expanding the scope of the claim beyond the preferred embodiment); Vitronics, 90 F.3d at 1583 (asserting that preferred embodiment must be consistent with the claims).
23 863 F.2d 855, 856 (Fed. Cir. 1988).
25 Id. col. 4 11. 35–42 (emphasis added).
26 See, e.g., Apex Inc. v. Raitan Computer, Inc., 325 F.3d 1364, 1377 (Fed. Cir. 2003). See generally infra tbl.3 (examining cases where lower courts limited claims by the written examples).
27 See Apex Inc., 325 F.3d at 1377.
28 See id.
29 See id. at 1374–75.
30 See id. at 1374.
claim limitation to the preferred embodiment." The fact that the mistake is common is evident from the term "classic." For some lower court opinions, the labeling of an example as "preferred" appears to have been the source of inspiration for the lower court's limiting the claims to features of that embodiment, as is evident from Callicrate v. Wadsworth Manufacturing. Playtex Products, Inc. v. Procter and Gamble Co., also indicates that the mere disclosure of an example as preferred, by virtue of its appearing as a figure (drawing), was the source of inspiration for the lower court's limiting of the claims to features of that embodiment. The opinion wrote, "By its reliance on the figures, the district court improperly limited claim 1 to a preferred embodiment. We have consistently advised against this approach to claim construction." RF Delaware, Inc. v. Pacific Keystone Technologies, Inc. discloses the fact-pattern where the lower court did not follow stare decisis, that is, the rule of Laitram, but instead had formulated an incorrect home-grown rule for claim construction. Referring to the lower court's mistake, the Federal Circuit wrote, "[t]he district court concluded that the preferred embodiment described the entire claimed invention, because it found correlation between the teachings of the preferred embodiment and the various dependent claims." See also, the opinion of the lower court in RF Delaware, Inc. v. Pacific Keystone Technologies, Inc. In other words, it is a mistake to limit the claims to the features found in a preferred embodiment, merely on the basis that the features in the example and in the claims are found to track each other.

Table 1 discloses a number of cases where the accused infringer argued that the claim should be limited to one or more features of a preferred embodiment. This argument was set forth before both the lower court and the Federal Circuit. In a subset of these cases, the lower court actually accepted this argument and proceeded to import a limitation from the preferred embodiment to the claims. The lower

Liebel-Flarsheim Co. v. Medrad, Inc. provides a typical example of the lower court's error. In a dispute relating to patents claiming a motorized syringe and its method of use, the Federal Circuit characterized the lower court's decision as

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43 358 F.3d 898, 904 (Fed. Cir. 2004).
44 334 F.3d 1274, 1279 (Fed. Cir. 2003).
45 483 F.3d 800, 807 (Fed. Cir. 2007).
46 340 F.3d 1298, 1309 (Fed. Cir. 2003).
47 325 F.3d 1364, 1373–74, 1377 (Fed. Cir. 2003).
48 183 F.3d 1334, 1341 (Fed. Cir. 1999).
50 339 F.3d 1352, 1356–57 (Fed. Cir. 2003).
51 258 F.3d 1317, 1326 (Fed. Cir. 2001).
52 326 F.3d 1334, 1342 (Fed. Cir. 2000).
53 147 F. 3d 1342, 1346, 1348 (Fed. Cir. 2008).
54 104 F.3d 1299, 1302–03 (Fed. Cir. 1997).
55 254 F.3d 1334, 1340–42 (Fed. Cir. 2001).
56 405 F.3d 1367, 1374 (Fed. Cir. 2005).
57 381 F.3d 1352, 1355–57 (Fed. Cir. 2004).
59 256 F.3d 1323, 1339 (Fed. Cir. 2001).
60 309 F.3d 1373, 1377, 1379 (Fed. Cir. 2002).
61 177 F.3d 968, 970–73 (Fed. Cir. 1999).
62 228 F.3d 1365, 1375–76 (Fed. Cir. 2000).
63 152 F.3d 1398, 1370, 1374 (Fed. Cir. 1998).
64 400 F.3d 901, 907 (Fed. Cir. 2005).
65 318 F.3d 1143, 1149–51 (Fed. Cir. 2003).
66 326 F.3d 1255, 1260, 1262 (Fed. Cir. 2000).
67 415 F.3d 1278, 1285–86 (Fed. Cir. 2005).
68 264 F.3d 1111, 1115, 1117, 1121 (Fed. Cir. 2001).
69 436 F.3d 1368, 1371, 1375 (Fed. Cir. 2006).
70 358 F.3d 898 (Fed. Cir. 2004).
follows. "The district court concluded that 'the specification makes clear that the injector includes a pressure jacket.'" Continuing with its commentary on the lower court's holding, the Federal Circuit added, "[b]ased largely on the fact that the . . . patents do not contain any description of an injector that lacks a pressure jacket, the district court construed all the asserted claims . . . to require a pressure jacket." To repeat, the problem is that the lower courts frequently make the mistake of construing the claims to be limited to elements or features of the invention that are expressly disclosed in the specification, and to exclude elements that happen not to be disclosed.

III. THE NATURE OF THE SOLUTION

Where the lower court narrows a claim by importing language from an example labeled as a "preferred," and where there is an appeal, the Federal Circuit often invokes *Laitram* and consequently properly construes the claim more broadly. Similarly, if the lower court narrows the claim in a way that prevents the claim from encompassing an example labeled as "preferred," the Federal Circuit invokes *Vitronics*, resulting in a more broadly construed claim.

*Laitram* and *Vitronics* are applied with remarkable frequency to repair claim construction errors made by the lower courts, and have been applied with remarkable success in the patentee's efforts to maintain broad claim scope. However, labeling one or more examples in the specification as "preferred," can introduce a level of unpredictability and can backfire, resulting in invalidation of the claims. This article discloses various techniques for arguing that a claim is invalid, based on the labeling of an embodiment as "preferred."

IV. OUTLINE OF CLAIM CONSTRUCTION, AND HOW *LAITRAM* AND *VITRONICS* FIT IN

Claim construction typically begins by assessing if the disputed terms in a litigated claim have any accepted or customary meaning in the art. Then the court reviews all of the claims of the patent for contexts that might help assess meaning of these terms. The court then reviews the specification for further contexts that
might provide meaning. For example, these contexts may take the form of an explicit definition of the term.

As a first step in claim construction, the Federal Circuit attempts to find the customary meaning of the claim term in the relevant technology, as used by the person having ordinary skill in the art (PHOSITA) as of the date of filing the patent application. This meaning can be provided by the life experiences of the judges, by dictionaries, or by the consensus of both plaintiffs and defendants. For example in Wenger v. Coating Machinery, the issue was the meaning of “circulation.” The opinion wrote that “in common parlance, it is customary to speak of ‘circulating’ something once... without ‘recirculating’ it a second time.” In Sunrace Roots Enterprises Co. v. SRAM Corp., the ordinary and customary meaning was assessed by a consensus between all parties involved.

Explicit contexts can take two forms, definitions in the specification and disclaimers set forth during the prosecution phase of the patent application. Explicit contexts generally prevail over any ordinary and customary meaning of a claim term. Explicit contexts also prevail over any weaker contexts as might be found in the specification. The weaker contexts include a group of literary environments known as “contexts of implication.”

The Federal Circuit has identified four types of contexts of implication. These particular contexts reside in the specification of the patent. These four contexts, which are weaker than explicit contexts, include global comments, statements of advantage of the invention over a competing device, statements of disadvantages of a competitor’s device compared to the claimed invention, and statements of a repeated and consistent nature. The term contexts of “implication” was expressly used to refer to these contexts in the cited cases. For example, Hockerson-Halberstadt, Inc. v. Avia Group International, Inc. set forth the role of contexts of implication:

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81 Id.
82 Hoechst Celanese Corp. v. BP Chems., Ltd., 78 F.3d 1375, 1356 (Fed. Cir. 1996); Vitronics Corp. v. Conectoricke, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).
83 E.g., Sunrace Roots Enters. Co. v. SRAM Corp., 336 F.3d 1298, 1302, 1304 (Fed. Cir. 2003) (using the consensus of both parties to define a term); Wenger Mfg., Inc. v. Coating Machinery Sys., Inc., 239 F.3d 1225, 1233 (2001) (using a dictionary and judge’s experience to define a term).
84 239 F.3d 1225, 1231–32 (Fed. Cir. 2000).
85 Id. at 1233.
86 336 F.3d 1298, 1302 (Fed. Cir. 2003).
87 Computer Docking Station Corp. v. Dell, Inc., 519 F.3d 1366, 1374 (Fed. Cir. 2008).
88 Id. at 1373–74.
89 See id. at 1374.
90 See Brody, Contexts of Implication, supra note 10, ¶ 56 tbl.2.
92 See id. ¶ 1.
93 See, e.g., Alloc, Inc. v. Int’l Trade Comm’n, 342 F.3d 1361, 1368–69, 1373 (2003) (using global comments, statement of advantage disadvantage, and statements of repeated and consistent nature); see also Brody, Contexts of Implications, supra note 10, ¶¶ 1, 56 tbl. 2, 57–64 app. 3. (discussing each context of implication and its placement in the claim construction hierarchy).
The court, therefore, must examine a patent’s specification to determine whether the patentee has given the term an unconventional meaning. See [Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996)] (holding that “it is always necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning [because the specification] acts as a dictionary when it expressly defines terms ... or when it defines terms by implication” (emphasis added)) ....

Claim construction follows a predictable hierarchy. First, the court tries to assess the ordinary and customary meaning of the disputed claim term. This is followed by an exploration of any meaning that might be provided by the entire claim set, and then by an exploration of the specification for explicit and implicit contexts. Laitram and Vitronics fit into the claim construction hierarchy, as follows. When the court has finished reviewing the claims, and is reviewing the specification (or the patentee’s remarks in the prosecution history), the patentee can invoke these two cases in an effort to maintain or expand claim breadth.

V. APPLICATION OF LAITRAM TO INCREASE CLAIM BREADTH, TO THE ADVANTAGE OF THE PATENTEE

Table 1 lists nearly all of the available cases from the Federal Circuit where Laitram was applied to maintain or broaden claim scope, and where the broadened claim scope worked to the advantage of the patentee. Acumed LLC v. Stryker Corp. provides a dramatic example of the application of Laitram because the Laitram holding was separately applied to two different claim terms. Acumed concerned U.S. Pat. No. 5,472,444, which claimed a surgical nail for inserting into bone. The patent used the term “preferred” at seven locations, including as the heading of a section, where the heading was, “Detailed Description of a Preferred Embodiment,” and to characterize the figures, where it recited, “FIG. 1 is a side view of a preferred embodiment of the invention.”

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95 Hockerson-Halberstadt, 222 F.3d at 955.
96 Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); see Brody, Contexts of Implications, supra note 10, ¶ 56 tbl.2.
97 Vitronics Corp., 90 F.3d at 1582; see Brody, Contexts of Implications, supra note 10, ¶ 56 tbl.2.
98 Vitronics Corp., 90 F.3d at 1582; see also Brody, Contexts of Implications, supra note 10, ¶ 56 tbl.2.
99 See Vitronics Corp., 90 F.3d at 1582; see also Brody, Contexts of Implications, supra note 10, ¶ 56 tbl.2.
100 Infra tbl.1.
101 483 F.3d 800, 806-09 (Fed. Cir. 2007).
103 444 Patent col. 1 ll. 60, col. 2 ll. 5, 20, col. 3 ll. 50, col. 4 ll. 44, 49, col. 5 ll. 4.
The disputed claim term was "curved." The accuser infringed argued that "curved" narrowly required a "continuous" bend, meaning that the nail must be smoothly curved, where the basis for this argument was that the patent disclosed smoothly curved nails to have an advantage over nails manufactured by competitors.

In contrast, the patentee argued that "curved" more broadly encompassed having a "bend... without sharp corners," which encompassed smooth bends as well as somewhat jagged bends, as found in stone archways.

The Federal Circuit held for the broader meaning, primarily because the ordinary and customary meaning of the word "bent" broadly encompasses completely smooth curves as well as curves occurring as fractals, e.g., curved archways made of rectangular bricks. The secondary basis for the holding was the rule of Laitram. The court held that the accused infringer had made "an attempt to import a feature from a preferred embodiment into the claims... we have repeatedly warned against confining the claims to those embodiments." This case demonstrates that labeling an example as "preferred" can work to the advantage of the patentee.

Another disputed claim term was "transverse." The accused infringer argued that "transverse" holes narrowly encompassed only perpendicular transverse holes. The basis for this argument was that the specification only disclosed transverse holes that are perpendicular. The Federal Circuit held for a broader meaning that did not require the characteristic of perpendicular, primarily on the basis that the perpendicular transverse hole embodiment was disclosed as a preferred embodiment. Again, this case demonstrates that labeling an example as preferred can work to the advantage of the patentee.

VI. HOLDINGS SIMILAR TO LAITRAM IN THE EUROPEAN PATENT COURTS

Before continuing with details of United States patent law relating to preferred embodiments, it might be pointed out that the European case law provides holdings similar to that of Laitram. Inventors often file duplicates of the same patent application in the United States and in Europe. The European Patent Office

104 Acumed, 483 F.3d at 804.
105 Id. at 804-05.
106 See Brief for Plaintiff-Appellee Acumed LLC at 33–37, Acumed LLC v. Stryker Corp., Nos. 06-1260, 06-1437 (Fed. Cir. Oct. 6, 2006); see also Acumed, 483 F.3d at 804 (noting that the district court "defined 'curved shank' as 'a shank that has a bend or deviation from a straight line without sharp corners or sharp angles.'").
107 Acumed, 483 F.3d at 805.
108 See id.
109 Id. (quoting Phillips v. AWH Corp., 415 F.3d 1303, 1334 (Fed. Cir. 2005)).
110 Id. at 807.
111 Id.
113 Acumed, 482 F.3d at 809.
(EPO)\textsuperscript{116} has held that the term “preferred embodiment” is synonymous with “optional,” a situation reminiscent to that of \textit{Laitram}.\textsuperscript{117} See, for example, \textit{Honeywell, Inc.} (2005) T 1259/01, where the opinion found that, “the board observes that the disclosure of a document has to be taken as a whole and cannot be limited to a preferred embodiment.”\textsuperscript{118} Other cases from the EPO have found that “preferably” is synonymous with “not necessarily have to”\textsuperscript{119} or with “optional.”\textsuperscript{120} Hence, U.S. patent practitioners may include the term “preferred” in their patents with the confidence that this term can maintain claim scope in both U.S. and European courts.


\textsuperscript{118} Honeywell, Inc. (2005) T 1259/01 at 7.


\textsuperscript{120} Colgate-Palmolive Co. v. Westone Products Ltd. (1999) T 0374/96 at 6.
Table 1. Cases Where Application of *Laitram*, or an Equivalent Case, Resulted in a Holding of a Broader Claim Interpretation, Where the Broader Claim Scope Worked to the Advantage of the Patentee.

<table>
<thead>
<tr>
<th>Case</th>
<th>U.S. Pat. No.</th>
<th>Disputed claim term</th>
<th>Narrow interpretation (interpretation favored by accused infringer)</th>
<th>Broad interpretation (interpretation favored by patentee)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Laitram Corp. v. Cambridge Wire Cloth Co.</em>[^121]</td>
<td>Reissue RE: 30,341</td>
<td>Shaft</td>
<td>Shaft with a square cross-section.</td>
<td>Shaft with any non-circular cross-section.</td>
</tr>
<tr>
<td><em>Abbott Laboratories v. Baxter Pharmaceutical Products, Inc.</em>[^122]</td>
<td>5,990,176</td>
<td>Effective amount of water</td>
<td>The effective amount of water must be above 131 parts per million (ppm).</td>
<td>Any amount of water can be used as long as it is effective, including amounts below and above 131 ppm.</td>
</tr>
<tr>
<td><em>Acumed LLC v. Stryker Corp.</em>[^123]</td>
<td>5,472,444</td>
<td>Curved</td>
<td>“Curved” narrowly requires a “continuous” bend, meaning that the nail must be smoothly curved.</td>
<td>“Curved” broadly encompasses smooth curves, as well as slightly jagged curves.</td>
</tr>
<tr>
<td>Transverse</td>
<td>“Transverse” holes narrowly encompassed only perpendicular transverse holes.</td>
<td>“Transverse” does not require the characteristic of perpendicular.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[^121]: 863 F.2d 855, 856, 862, 865 (Fed. Cir. 1988).
[^123]: 483 F.3d 800, 802–03, 804–05, 807 (Fed. Cir. 2007).
<table>
<thead>
<tr>
<th>Anchor Wall Systems, Inc. v. Rockwood Retaining Walls, Inc.(^ {124} )</th>
<th>5,490,363</th>
<th>Protrusion</th>
<th>&quot;Protrusion&quot; narrowly requires that the claimed masonry block have a central narrow portion.</th>
<th>&quot;Protrusion&quot; does not require that the masonry block have a central narrow portion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apex Inc. v. Raritan Computer, Inc.(^ {125} )</td>
<td>5,937,176</td>
<td>Serial data packet</td>
<td>The serial data packet must be capable of including both a keyboard signal and a mouse signal.</td>
<td>The serial data packet need not be capable of including both a keyboard and mouse signal.</td>
</tr>
<tr>
<td>Atmel Corp. v. Silicon Storage Technology, Inc.(^ {126} )</td>
<td>4,511,811</td>
<td>Increments of charge</td>
<td>Increments must be transferred discretely.</td>
<td>The transfer may or may not be discrete.</td>
</tr>
<tr>
<td>Burke, Inc. v. Bruno Independent Living Aids, Inc.(^ {127} )</td>
<td>4,570,739</td>
<td>Floor pan</td>
<td>The floor pan must be sheet metal.</td>
<td>The floor pan may be sheet metal, or it may be made of discontinuous pieces of metal.</td>
</tr>
<tr>
<td>Callicrate v. Wadsworth Manufacturing, Inc.(^ {128} )</td>
<td>5,997,553</td>
<td>Lever</td>
<td>The lever must be mounted on a pivot, where the pivot is mounted on the body of the device.</td>
<td>The lever did not need to be mounted on a pivot.</td>
</tr>
</tbody>
</table>

\(^ {124} \) 340 F.3d 1298, 1300, 1308 (Fed. Cir. 2003).
\(^ {125} \) 325 F.3d 1364, 1367–68, 1375 (Fed. Cir. 2003). The accused infringer did not specifically argue that the “serial data packet” element must be limited to the feature of the disclosed example, but broadly argued that all the words of the claim must be limited to the various features of this example. Id. at 1377. The Federal Circuit refused, in part, on the basis that the example was labeled as “preferred.” Id.
\(^ {126} \) 76 F. App’x 298, 300, 304–05 (Fed. Cir. 2003) (unpublished table decision).
\(^ {127} \) 183 F.3d 1334, 1336, 1339–42 (Fed. Cir. 1999).
\(^ {128} \) 427 F.3d 1361, 1363, 1367–68 (Fed. Cir. 2005).
<table>
<thead>
<tr>
<th><em>CASE</em></th>
<th>NUMBER</th>
<th>DESCRIPTION</th>
<th>CLARIFICATION</th>
<th>CLARIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comark Communications, Inc. v. Harris Corp.</td>
<td>5,198,904</td>
<td>Video delay circuit</td>
<td>The circuit must function to compensate for a delay.</td>
<td>The circuit need not function to compensate for a delay.</td>
</tr>
<tr>
<td>Cordis Corp. v. Medtronic Ave, Inc.</td>
<td>4,739,762</td>
<td>Slots formed therein</td>
<td>“Slots formed therein” requires that the slots be manufactured by removing material from a pre-existing wall surface.</td>
<td>Slots can be formed in a wall surface by means other than removing material, such as by constructing the wall with openings built into it.</td>
</tr>
<tr>
<td>Dayco Products, Inc. v. Total Containment, Inc.</td>
<td>5,199,752</td>
<td>Length that is different from</td>
<td>Projections have a length greater than recesses.</td>
<td>Projections have a length not equal to recesses.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plurality of projections</td>
<td>Plurality must mean three or more.</td>
<td>Plurality means two or more.</td>
</tr>
<tr>
<td>Dow Chemical Co. v. United States</td>
<td>3,817,039</td>
<td>Injection rate</td>
<td>The injection rate must follow a formula in the specification.</td>
<td>The injection rate is not limited to the formula in the specification.</td>
</tr>
<tr>
<td>DSW, Inc. v. Shoe Pavilion, Inc.</td>
<td>6,948,622</td>
<td>Movably positioned stack divider</td>
<td>Movably positioned stack divider with a track and roller.</td>
<td>Movably positioned stack divider, either with or without a track roller.</td>
</tr>
</tbody>
</table>

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129 156 F.3d 1182, 1183, 1186–87 (Fed. Cir. 1998).
130 339 F.3d 1352, 1355, 1356–57 (Fed. Cir. 2003).
131 258 F.3d 1317, 1319, 1326–28 (Fed. Cir. 2001).
133 537 F.3d 1342, 1344, 1347–48 (Fed. Cir. 2008).
<table>
<thead>
<tr>
<th>Case</th>
<th>Patent No.</th>
<th>Function</th>
<th>Requirement</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ekchian v. The Home Depot, Inc.</em></td>
<td>4,624,140</td>
<td>Conductive liquid-like medium</td>
<td>Conductivity must be equal or greater to that shown in the specification.</td>
<td>Conductivity can be lower or greater than that shown in specification, as long as it can support function as a capacitor.</td>
</tr>
<tr>
<td><em>Enercon v. United States International Trade Commission.</em></td>
<td>5,083,039</td>
<td>Rotating</td>
<td>Rotating that must use the technique of rotational transformation</td>
<td>Any technique of rotating.</td>
</tr>
<tr>
<td><em>Eolas Technologies, Inc. v. Microsoft Corp.</em></td>
<td>5,838,906</td>
<td>Executable application</td>
<td>Standalone computer programs.</td>
<td>Any type of computer program.</td>
</tr>
<tr>
<td><em>Franklin Electric Co., Inc. v. Dover Corp.</em></td>
<td>5,085,257</td>
<td>Facilitate positioning</td>
<td>Facilitate positioning requires physical contact.</td>
<td>Facilitate positioning does not require contact. Contact is optional.</td>
</tr>
<tr>
<td><em>Gart v. Logitech, Inc.</em></td>
<td>4,862,165</td>
<td>Angular medial surface of a computer mouse</td>
<td>“Angular medial surface” narrowly requires a ledge on the computer mouse.</td>
<td>“Angular medial surface” broadly encompasses either a ledge, or some other structure, on the computer mouse.</td>
</tr>
</tbody>
</table>

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134 104 F.3d 1299, 1300–03 (Fed. Cir. 1997).
135 151 F.3d 1376, 1378, 1384–85 (Fed. Cir. 1998).
136 399 F.3d 1325, 1328, 1336 (Fed. Cir. 2005).
138 254 F.3d 1334, 1336, 1340, 1342 (Fed. Cir. 2001).
<table>
<thead>
<tr>
<th>The Gillette Co. v. Energizer Holdings, Inc.¹³⁹</th>
<th>6,212,777</th>
<th>Razor blade unit</th>
<th>“Razor blade unit” narrowly encompasses only a unit with three blades.</th>
<th>“Razor blade unit” broadly encompasses a unit with three blades or more blades.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Diagnostics, Inc. v. Lifescan, Inc.¹⁴⁰</td>
<td>6,268,162</td>
<td>Suitably stable endpoint</td>
<td>The endpoint must be with reference to predetermined timing.</td>
<td>The endpoint can be either with reference to predetermined timing, by reference to reflectance readings, or by other methods.</td>
</tr>
<tr>
<td>IEX Corp. v. Blue Pumpkin Software, Inc.¹⁴¹</td>
<td>6,044,355</td>
<td>Skill group</td>
<td>All agents in a skill group must possess the same skills.</td>
<td>Agents in a skill group must possess one given same skill, but may also possess additional skills.</td>
</tr>
<tr>
<td>Interactive Gift Express, Inc. v. Compuserve Inc.¹⁴²</td>
<td>4,528,643</td>
<td>Authorization code</td>
<td>“Authorization code” narrowly required a code for enabling the machine to decode the information.</td>
<td>“Authorization code” does not impose any requirement for a code that enables the machine to decode information.</td>
</tr>
<tr>
<td>Inverness Medical Switzerland GmbH v. Warner Lambert Co.¹⁴³</td>
<td>5,622,871</td>
<td>On</td>
<td>“On” narrowly means on top of.</td>
<td>“On” broadly encompasses on top of, as well as soaked within.</td>
</tr>
</tbody>
</table>

¹³⁹ 405 F.3d 1367, 1368–69, 1371, 1374 (Fed. Cir. 2005).
¹⁴² 256 F.3d 1323, 1327, 1340–41 (Fed. Cir. 2001).
¹⁴³ 309 F.3d 1373, 1374, 1377–79 (Fed. Cir. 2002).
<table>
<thead>
<tr>
<th>Patent Citation</th>
<th>Invention Description</th>
<th>Preferred Embodiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson Worldwide Associates, Inc. v. Zebco Corp.(^{144})</td>
<td>5,202,835 Coupled</td>
<td>“Coupled” narrowly encompasses only mechanical or physical coupling.</td>
</tr>
<tr>
<td>Karlin Technology, Inc. v. Surgical Dynamics, Inc.(^{145})</td>
<td>5,015,247 Series of threads</td>
<td>Threads must be periodically interrupted to resist unscrewing. Series refers to one particular thread having many interruptions.</td>
</tr>
<tr>
<td>Lampi Corp. v. American Power Products, Inc.(^{146})</td>
<td>5,169,227 Housing having two half-shells</td>
<td>The housing must have only two half-shells.</td>
</tr>
<tr>
<td>Liebel-Flarshem Co. v. Medrad, Inc.(^{147})</td>
<td>5,928,197 Physical indicia</td>
<td>“Physical indicia” narrowly means only length.</td>
</tr>
</tbody>
</table>

\(^{144}\) 175 F.3d 985, 987–88, 992 (Fed. Cir. 1999).
\(^{145}\) 177 F.3d 968, 969, 971–72 (Fed. Cir. 1999); Brief for Defendants-Appellants Karlin Technology, Inc. and Sofamor Danek Group, Inc. at 28, Karlin Tech., Inc. v. Surgical Dynamics, Inc. 177 F.3d 968 (Fed. Cir. 1999); Brief for Plaintiff-Apellee Surgical Dynamics, Inc. at 21–22, Karlin Tech., Inc. v. Surgical Dynamics, Inc. 177 F.3d 968 (Fed. Cir. 1999).
\(^{146}\) 228 F.3d 1365, 1367, 1375–76 (Fed. Cir. 2000).
\(^{147}\) 358 F.3d 898, 900, 912–13 (Fed. Cir. 2004).
<table>
<thead>
<tr>
<th>Case</th>
<th>Patent No.</th>
<th>Type</th>
<th>Description</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Mantech Environmental Corp. v. Hudson Environmental Services, Inc.</em>&lt;sup&gt;148&lt;/sup&gt;</td>
<td>5,286,141</td>
<td>Well</td>
<td>&quot;Well&quot; narrowly encompasses structures that could enable either of these functions or both of these functions.</td>
<td></td>
</tr>
<tr>
<td><em>Oiestad v. Ag-Industrial Equipment Co., Inc.</em>&lt;sup&gt;149&lt;/sup&gt;</td>
<td>4,821,486</td>
<td>Roller</td>
<td>Roller must have a pointed end.</td>
<td>Roller has an end that can be pointed or non-pointed, i.e., merely a projecting end.</td>
</tr>
<tr>
<td><em>Playtex Products, Inc. v. Procter &amp; Gamble Co.</em>&lt;sup&gt;150&lt;/sup&gt;</td>
<td>4,536,178</td>
<td>Substantially flattened surfaces</td>
<td>The surfaces must be flat within an established manufacturing tolerance.</td>
<td>The surfaces must be substantially flat but not narrowly within any established manufacturing tolerance.</td>
</tr>
<tr>
<td><em>Prima Tek II, L.L.C. v. Polypap, S.A.R.L.</em>&lt;sup&gt;151&lt;/sup&gt;</td>
<td>5,410,856</td>
<td>Floral holding material</td>
<td>&quot;Floral holding material&quot; narrowly requires flowers be inserted into and through the material.</td>
<td>&quot;Floral holding material&quot; broadly encompasses flowers inserted into and through, as well as inserted into pre-existing holes in the material.</td>
</tr>
</tbody>
</table>

<sup>148</sup> 152 F.3d 1368, 1369, 1371, 1375 (Fed. Cir. 1998). The court did not specifically cite any case holding that it was improper to import limitations from a preferred embodiment to the claims. *Id.* at 1375. However, the court repeatedly observed that the example that had been used as the source of the limitation, and used by the lower court for limiting the claims, was an example that was disclosed in the specification as being "preferred." *Id.* at 1374–75.


<sup>150</sup> 400 F.3d 901, 902, 906–07 (Fed. Cir. 2005).

<sup>151</sup> 318 F.3d 1143, 1145, 1147, 1149–50 (Fed. Cir. 2003).
<table>
<thead>
<tr>
<th>Case Title</th>
<th>Patent No.</th>
<th>Type</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resonate Inc. v. Alteon Websystems, Inc.</td>
<td>5,774,660</td>
<td>Transmitting</td>
<td>Data that is transmitted from the server to the client must bypass the load balancer.</td>
<td>Data that is transmitted from the server to the client may, or may not, bypass the load balancer.</td>
</tr>
<tr>
<td>RF Delaware, Inc. v. Pacific Keystone Technologies, Inc.</td>
<td>5,198,124</td>
<td>Filter bed</td>
<td>“Filter bed” should narrowly be limited to filter beds with multiple layers.</td>
<td>“Filter bed” broadly encompasses filter beds that are one-layer embodiments or multiple-layer embodiments.</td>
</tr>
<tr>
<td>Rexnord Corp. v. Laitram Corp.</td>
<td>5,634,550</td>
<td>Portion</td>
<td>Multi-piece devices</td>
<td>1-piece devices and multi-piece devices</td>
</tr>
<tr>
<td>SanDisk Corp. v. Memorex Products, Inc.</td>
<td>5,602,987</td>
<td>Memory cell</td>
<td>Every memory cell must be partitioned.</td>
<td>Memory cells can be either partitioned or non-partitioned.</td>
</tr>
<tr>
<td>Transmatic, Inc. v. Gulton Industries, Inc.</td>
<td>4,387,415</td>
<td>Light housing</td>
<td>Light housing must not extend beyond the associated light cover.</td>
<td>Light housing may or may not extend beyond the light cover.</td>
</tr>
</tbody>
</table>

152 338 F.3d 1360, 1361, 1365–66 (Fed. Cir. 2003).
153 326 F.3d 1255, 1258, 1262–64 (Fed. Cir. 2000).
154 274 F.3d 1336, 1340–41 (Fed. Cir. 2001).
155 415 F.3d 1278, 1280, 1284–86 (Fed. Cir. 2005).
156 53 F.3d 1270, 1272, 1277 (Fed. Cir. 1995).
**Turbocare Division of Demag Delaval Turbomachinery Corp. v. General Electric Co.**

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Claim Type</th>
<th>Claim Term</th>
<th>Claim Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,436,311</td>
<td>Large clearance position</td>
<td>“Large clearance position” requires that the outward facing surface of an inner portion of a seal ring touch the inward facing surface of the casing shoulders.</td>
<td>“Large clearance position” does not impose this requirement.</td>
</tr>
</tbody>
</table>

**Uniloc USA, Inc. v. Microsoft Corp.**

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Claim Type</th>
<th>Claim Term</th>
<th>Claim Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,490,216</td>
<td>Licensee unique ID</td>
<td>The ID must contain information specific to the user, e.g., credit card number, name, or address.</td>
<td>The ID may be based on personal information, or on other unique information, e.g., the name of the user’s employer or church.</td>
</tr>
</tbody>
</table>

**Varco, L.P. v. Pason Systems USA Corp.**

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Claim Type</th>
<th>Claim Term</th>
<th>Claim Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,474,142</td>
<td>Relaying</td>
<td>Valves used in relaying step must be pneumatic valves.</td>
<td>Valves used in relaying step can be any kind of valve.</td>
</tr>
</tbody>
</table>

**Verizon Services Corp. v. Vonage Holdings Corp.**

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Claim Type</th>
<th>Claim Term</th>
<th>Claim Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,282,574</td>
<td>Translation</td>
<td>Translation requiring conversion of higher level protocol to lower level protocol.</td>
<td>Translation without this requirement.</td>
</tr>
</tbody>
</table>

**VII. CAN DIRECTING THE COURT'S ATTENTION TO THE PREFERRED EMBODIMENT, AND INVOKING LAITRAM, PREVAIL OVER CONTEXTS FOUND IN THE SPECIFICATION?**

An accused infringer usually argues that the ordinary and customary meaning of the disputed claim term, as well as various contexts found in the specification, all 

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157 264 F.3d 1111, 1113, 1123 (Fed. Cir. 2001).
159 436 F.3d 1368, 1369, 1372, 1375 (Fed. Cir. 2006).
160 503 F.3d 1295, 1298, 1302 (Fed. Cir. 2007).
militate for a narrow, restricted meaning of the disputed term.\textsuperscript{161} In contrast, the patentee usually argues that the ordinary and customary meaning, as well as these contexts, all support a broader meaning.\textsuperscript{162} But the patentee has an additional tool, a tool usually not useful to the infringer’s arguments. This tool takes the form of referring to an example that is labeled as “preferred,” and then invoking \textit{Laitram}.\textsuperscript{163} A question that arises, therefore, is this. Can the broad meaning militated by applying \textit{Laitram} prevail over the narrow meaning that is required or suggested by various contexts found in the specification, e.g., definitions, recitations of advantage of the invention over devices of competitors, global comments, and the like?

VIII. EXPLICIT CONTEXTS

\textbf{A. Laitram Fails to Prevail Over an Explicit Context.}

\textit{Modine Manufacturing Co. v. United States International Trade Commission} provides an example where \textit{Laitram} failed to prevail over an explicit context.\textsuperscript{164} The explicit context took the form of a disclaimer made during prosecution.\textsuperscript{165} The disputed claim term was “relatively small hydraulic diameter,” and what was in question was whether the diameter needed to be in the narrow range of 0.015-0.040 inches, or if the range could be as wide as 0.070 inches.\textsuperscript{166} The opinion observed that the smaller diameter range was the preferred embodiment,\textsuperscript{167} and noted the rule of \textit{Laitram}.\textsuperscript{168} However, during prosecution of the patent application, the applicant had submitted a continuing patent application where the range of “0.015-0.070 inches” was replaced with the narrower range, “0.015-0.040.”\textsuperscript{169} Thus, the applicant had changed the specification to recite a narrow the range, but had not changed the claims to narrow the range.\textsuperscript{170} This type of behavior constitutes prosecution disclaimer.\textsuperscript{171} The court held that the range must be the same as the narrow range found in the preferred embodiment (0.015-0.040 inches), because “this change was conspicuous and unambiguous.”\textsuperscript{172} In a nutshell, an attempt to invoke \textit{Laitram} failed to maintain a broad claim scope.\textsuperscript{173} The attempt failed because prosecution disclaimer militated for a narrower interpretation.\textsuperscript{174}

\textsuperscript{161} See, e.g., \textit{Honeywell Int’l Inc. v. ITT Indus., Inc.}, 452 F.3d 1312, 1317 (Fed. Cir. 2006).
\textsuperscript{162} See, e.g., \textit{id}.
\textsuperscript{163} See \textit{Laitram Corp. v. Cambridge Wire Cloth Co.}, 863 F.2d 855, 865 (Fed. Cir. 1988) (holding that descriptions in preferred embodiments should not limit the scope of the claims).
\textsuperscript{164} \textit{75 F.3d 1545, 1551–52} (Fed. Cir. 1996).
\textsuperscript{165} \textit{id}.
\textsuperscript{166} \textit{id.} at 1549, 1550–52.
\textsuperscript{167} \textit{id.} at 1551: \textit{Laitram}, 863 F.2d at 865.
\textsuperscript{168} \textit{Modine}, 75 F.3d at 1552.
\textsuperscript{169} See \textit{id}.
\textsuperscript{170} \textit{Purdue Pharma L.P. v. Endo Pharmas. Inc.}, 438 F.3d 1123, 1136 (Fed. Cir. 2006) (“Under the doctrine of prosecution disclaimer, a patentee may limit the meaning of a claim term by making a clear and unmistakable disavowal of scope during prosecution.”).
\textsuperscript{171} \textit{Modine}, 75 F.3d at 1552.
\textsuperscript{172} See \textit{id} at 1551.
\textsuperscript{173} See \textit{Purdue Pharma}, 438 F.3d at 1136 (defining the doctrine of prosecution disclaimer).
Similarly, *Jinik Co. v. International Trade Commission* discloses the fact pattern where an explicit context (prosecution disclaimer) governed the meaning of the claim, where this meaning was narrow and was confined to that set forth in the preferred embodiment. The disputed claim term was “mixture,” where the disclaimer militated that “mixture” only encompassed mixtures having a high ratio of liquid binder to powdered matrix.

To conclude, it is unlikely that *Laitram* can ever prevail over an explicit context, that is, explicit definitions and prosecution disclaimers.

IX. CONTEXTS OF IMPLICATION

Statements of advantage, as they might appear in the written description part of a patent, are a common type of implicit context. This means that the patent discloses that the invention has one or more advantages over devices or compositions manufactured by a competitor. Statements of advantages were used as part of the basis for arriving at the meaning of a claim term in the following opinions. In *Tronzo v. Biomet, Inc.*, the advantage was that competing devices were inferior. In *Gaus v. Conair Corp.*, the advantage was preventing electric shock. In *Hockerson-Halberstadt, Inc. v. AVIA Group International, Inc.*, the advantage was cushioning. In *Sofamor Danek Group, Inc. v. DePuy-Motech, Inc.*, the advantage was eliminating awkward bulkiness. Further examples are provided in the footnote. Although it is a tradition in patent drafting to label one or more examples as having some advantage over competing devices or compositions, this technique frequently works against the patentee during litigation, by inspiring the
court to narrow the claims in a way that is aligned with one or more features of the advantageous embodiment.\textsuperscript{185}

Statements of a repeated and consistent nature, another type of context of implication, are often used by the Federal Circuit to narrow the scope of a disputed claim.\textsuperscript{186} Examples of this type of implicit context are disclosed in the footnoted cases.\textsuperscript{187}

The following provides a concrete example of a repeated and consistent statement. \textit{Union Oil Co. of California v. Atlantic Richfield Co.} concerned a patent that claimed a type of gasoline.\textsuperscript{188} The dispute was whether the claim covered any type of gasoline, e.g., for commuter automobiles, race cars, and airplanes, or if it narrowly encompassed only gasoline for commuter autos.\textsuperscript{189} The opinion observed that the specification \textit{repeatedly and consistently referred} to use of the gasoline in ordinary commuter automobiles.\textsuperscript{190} At four points in the patent, the specification disclosed air pollution.\textsuperscript{191} Also, the patent disclosed that the claimed gasoline had been tested in ordinary commuter automobiles, Oldsmobile Calais, Ford Tempo, Honda Accord, Plymouth Shadow, Chevrolet Suburban.\textsuperscript{192} On the basis of the \textit{repeated and consistent} disclosures relating to commuter autos (and not to race cars or to aviation) the court held that the claim to a gasoline must encompass only gasolines suitable for passenger cars.\textsuperscript{193}

A further implicit context is the global comment.\textsuperscript{194} The phrase, “present invention” is sometimes interpreted to be a global comment.\textsuperscript{195} Global comment means that the elements found in a particular embodiment (labeled as “present invention”) apply to all embodiments of the invention that are encompassed by the claims.\textsuperscript{196} In a number of cases, the Federal Circuit found that the term “present invention,” when used to refer to an example, was a global comment that must limit
the claims to features found in that example.\textsuperscript{197} Although it is a tradition in patent drafting to label one or more examples as the “present invention,”\textsuperscript{198} this technique frequently backfires against the patentee during litigation, by inspiring the court to narrow the claims in a way that is aligned with specific features of the embodiment so labeled.\textsuperscript{199} Concrete examples are found in the footnote.\textsuperscript{200}

A. Laitram Can Prevail Over Contexts of Implication

Northrop Grumman Corp. v. Intel Corp. concerned U.S. Pat. No. 4,453,229, which claimed a component (bus interface unit) of a computer system.\textsuperscript{201} The accused infringer argued, and the lower court agreed, that the claim should be limited to a bus interface unit that used a “command/response protocol.”\textsuperscript{202} The basis for limiting the claim was that “[t]he patent refers repeatedly to the advantages of the invention in that context.”\textsuperscript{203} But the Federal Circuit expressly observed that this embodiment was labeled as a preferred embodiment.\textsuperscript{204} In face of a context of implication (a disclosure of advantage), and in face of the lower court’s holding that the claim must be limited on the basis of this advantage, the Federal Circuit reversed, applied the rule of Laitram, and refused to limit the claim.\textsuperscript{205} Laitram prevailed over a context of implication.

Also, in Uniloc USA, Inc. v. Microsoft Corp. the accused infringer (and the dissent) argued that a term referring to the identity of a licensee must be narrowly based on personal information, such as the licensee’s name or home address.\textsuperscript{206} This argument was based on a context of implication -- a repeated and consistent disclosure found in the specification.\textsuperscript{207} But the majority observed that the example


\textsuperscript{199} See, e.g., infra note 200.

\textsuperscript{200} nCube Corp. v. Seachange Int’l, 436 F.3d 1317, 1329 (Fed. Cir. 2006) (Dyk, J., dissenting) (stating that the use of the term “present invention” is strong evidence that the use applies to the invention as a whole). Gaus v. Conair Corp., 363 F.3d 1284, 1289–90 (Fed. Cir. 2004) (identifying a global comment by the phrase, “according to the invention,” and another global comment identified by the phrase, “the object of the invention,” and limiting the claims to the features disclosed by these phrases).

\textsuperscript{201} 325 F.3d 1346, 1347, 1349 (Fed. Cir. 2003); Bus Interface Unit, U.S. Patent No. 4,453,229 (filed Mar. 11, 1982) (issued June 5, 1984).

\textsuperscript{202} Northrop Grumman, 325 F.3d at 1355.

\textsuperscript{203} See id. (emphasis added).

\textsuperscript{204} Id.

\textsuperscript{205} Id. at 1355–56.

\textsuperscript{206} 290 F. App’x 337, 342, 345 (Fed. Cir. 2008) (unpublished table decision).

\textsuperscript{207} See id. at 342; Brief of Defendant-Appellee at 45–46, Uniloc USA, Inc. v. Microsoft Corp., 290 F. App’x 337 (Fed. Cir. 2008) (No. 2008-1121).
was a preferred embodiment, applied the rule of *Laitram*, and held for a broader meaning of the term. Thus, *Laitram* prevailed over the implicit context.

Similarly, in *Northern Telecom Ltd. v. Samsung Electronics Co., Ltd.* the accused infringer argued that a claim to aluminum etching should be limited to “ion bombardment” on the basis of a context of implication, namely, the patent’s disclosure that ion bombardment had the *disadvantage* of causing damage. The Federal Circuit refused to limit the claim, on the basis that the patent expressly disclosed that reduced or excluded ion bombardment was merely a preferred embodiment. The court applied the rule of *Laitram*, and refused to limit the claim. *Laitram* trumped over the implicit context.

**B. Laitram Fails to Prevail Over a Context of Implication**

Table 2 discloses opinions where a narrower meaning of a claim term, as suggested by a context of implication, prevailed over the broader meaning dictated by applying *Laitram*. The fact that contexts of implication trumped over *Laitram* demonstrates that *Laitram* is a relatively weak doctrine.

*Astrazeneca AB v. Mutual Pharmaceutical Co., Inc.* concerned U.S. Pat. No. 4,803,081, which claims a drug formulation consisting of an active drug combined with a solubilizer. The disputed claim term was “solubilizer.” The accused infringer argued that “solubilizer” narrowly encompassed only surfactants (and to exclude co-solvents), while the patentee argued that “solubilizer” broadly encompassed surfactants and co-solvents. The Federal Circuit observed that the specification disclosed surfactants as the preferred embodiment and recognized the rule of *Laitram*, writing, “it is of course improper to limit the claims to the particular preferred embodiments described in the specification . . . .”

But unfortunately for the patentee, the Federal Circuit also observed various contexts that appeared to dictate the meaning of “solubilizer,” writing that, “[t]he specification may define claim terms ‘by implication’ . . . .” Three contexts of implication were found in the specification: (1) Repeated and consistent disclosure; (2) Global comment; and (3) Recitation of advantage.

To view the big picture, the rule of *Laitram* was overwhelmed by the various contexts of implication, and the court held for a narrow meaning, to the disadvantage of the patentee.

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208 *Uniloc*, 290 F. App’x at 342–43.
210 *N. Telecom*, 215 F.3d at 1293.
211 Id.
212 See infra tbl.2.
214 *Astrazeneca*, 384 F.3d at 1336.
215 Id. at 1336, 1338.
216 Id. at 1340.
217 Id. at 1339.
218 See id. at 1338–41.
219 See id. at 1341.
<table>
<thead>
<tr>
<th>Case</th>
<th>The Preferred Embodiment</th>
<th>Context of Implication</th>
<th>Holding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Astrazeneca AB v. Mutual Pharmaceutical Co., Inc.</strong></td>
<td>Solubilizers that are surfactants</td>
<td>Three different contexts of implication: repeated and consistent comments about surfactants; global comment about surfactants; and advantage of surfactants.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
<tr>
<td><strong>Bell Atlantic Network Services, Inc. v. Covad Communications Group, Inc.</strong></td>
<td>Mode that is conventional, bi-directional, or reversible (but no disclosure of modes with varied rates)</td>
<td>Repeated and consistent use of &quot;mode&quot; and &quot;rate&quot; to refer to separate concepts.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
<tr>
<td><strong>Black &amp; Decker, Inc. v. Robert Bosch Tool Corp.</strong></td>
<td>Power conversion circuit with a DC/DC converter</td>
<td>Repeated disclosure of power conversion circuit with a DC/DC converter.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
<tr>
<td><strong>Dentsply International, Inc. v. Hu-Friedy Mfg. Co., Inc.</strong></td>
<td>The tip of a dental tool is disclosed as a separate attachment.</td>
<td>Repeated and consistent disclosure that the tip is a separate attachment. Global comment that the tip is a separate attachment.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
<tr>
<td><strong>Gentry Gallery, Inc. v. Berkline Corp.</strong></td>
<td>Controls are on the sofa’s console</td>
<td>Repeated and consistent disclosures of controls being mounted on the console.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
</tbody>
</table>

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220 384 F.3d 1333, 1339–40, 1342 (Fed. Cir. 2004).
221 362 F.3d 1258, 1270–71, 1273 (Fed. Cir. 2001).
223 Id. at 288. Though the specification failed to explicitly indicate the “preferred embodiment,” the court looked to the prosecution history in deciding which embodiment was “preferred.” See id. at 289; see Ruggedized Tradesworkers Radio, U.S. Patent No. 6,308,059 (filed Dec. 11, 1998) (issued Oct. 23, 2001) (failing to explicitly identify a “preferred embodiment”).
225 134 F.3d 1473, 1478–79 (Fed. Cir. 1998).
The exceptional power of *Laitram* derives from the following sources. First, *Laitram* generally prevails because stronger bases for arguments, such as explicit definitions, usually do not exist in patents, and therefore cannot be used in arguments by the accused infringer.229 Second, it is easy to articulate an argument based on *Laitram*. All it requires is directing the court's attention to an example labeled as "preferred" and requesting that the claims not be limited to features of that example.230 Third, the Federal Circuit is unusually willing to apply *Laitram*, even as the primary or only argument in claim construction.231 This willingness to apply *Laitram* contrasts with the Federal Circuit's view of another weak doctrine of claim construction, the doctrine of claim differentiation.232 The court has characterized

<table>
<thead>
<tr>
<th>Renishaw PLC v. Marposs Societa' Per Azioni226</th>
<th>When a probe (or stylus) touches the workpiece and deflects, a signal occurs at about the exact moment of touching.</th>
<th>Repeated and consistent disclosures that when the probe touches the workpiece, a signal occurs at about the exact moment of touching.</th>
<th>The court narrowed the claim to the preferred embodiment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLT, Inc. v. Artesyn Technologies, Inc.227</td>
<td>A current mirror that maximizes flux swing, and entailing that all the magnetizing energy be returned to the transformer.</td>
<td>Repeated and consistent disclosure a current mirror that maximizes flux swing, thus entailing that all the magnetizing energy be returned to the transformer.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
<tr>
<td>Wang Laboratories, Inc. v. America Online, Inc.228</td>
<td>A frame that is a character-based protocol.</td>
<td>Repeated and consistent comments about character-based protocol.</td>
<td>The court narrowed the claim to the preferred embodiment.</td>
</tr>
</tbody>
</table>

---

228 197 F.3d 1377, 1381–82 (Fed. Cir. 1999).
229 Compare supra tbl.1 (listing thirty-nine cases where the rule of *Laitram* prevailed), with supra tbl.2 (listing eight cases where the rule of *Laitram* did not prevail).
230 See Laitram Corp. v. Cambridge Wire Cloth Co., 863 F.2d 855, 865 (Fed. Cir. 1988).
231 See, e.g., supra tbl.1.
232 See Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1480 (Fed. Cir. 1998) (“[T]he doctrine of claim differentiation cannot broaden claims beyond their correct scope, determined in light of the specification and the prosecution history and any relevant extrinsic evidence.”) (emphasis added).
claim differentiation as a “limited tool of claim construction” or that “it is not a hard and fast rule of construction.” The Federal Circuit has never discounted Laitram in this manner.

X. MEANS PLUS FUNCTION CLAIMS

The Federal Circuit has provided very little guidance as to how Laitram impacts means plus function claims. The available guidance is as follows. Means plus function claims find a statutory basis in 35 U.S.C. § 112, paragraph six. This type of claim represents a special situation in patent law, as claim construction requires a review of the specification for structures that correspond to the function recited in the claims, and then limiting of the claims to encompass only these structures, and their equivalents. The means plus function claim uses a recitation of function as a surrogate for one or more parts of a machine, device, or chemical composition. In construing a means plus function claim, the meaning of the functional term must be limited to an example, e.g., a structure or composition, recited in the specification, or to its equivalent.

Where the court encounters a particular example disclosed in the specification, an issue that might arise is whether the claim is to be broadly applied to all the features of that particular example, or if the claim must more narrowly be confined by requiring the recitation of all elements found in all of the examples.

Versa Corp. v. Ag-Bag International Ltd. concerned U.S. Pat. No. 5,426,910, which claimed a machine that fills bags with compost. The specification of the patent disclosed a machine that contained two structures used for introducing air into the bags, namely, a flute and a perforated pipe. The issue was whether the term “means” in the claim phrase, “means for creating air channels” absolutely required the presence of both a flute and perforated pipe, or merely required a perforated pipe and optionally a flute.

The accused infringer, Ag-Bag, made a machine that did not include a flute. Ag-Bag wanted to escape a holding of infringement. Therefore, Ag-Bag argued that the claim absolutely required that the claimed machine contain a flute.

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238 See Kemco Sales, 208 F.3d at 1361–62.
241 Id. col. 3 ll. 5–37.
242 Versa Corp., 392 F.3d at 1328.
243 Id.
In reviewing the specification for a structure corresponding to the claim term “means,” the Federal Circuit observed that the specification disclosed text and drawings showing the presence of both a flute and perforated pipe.\textsuperscript{245} But the court also observed that the specification recited, “It is believed that sufficient air will be present to achieve decomposition with either the channels 48 or the perforated pipe 50 although it is \textit{preferred} that both the \textit{flutes} 46 and the pipe 50 be utilized.”\textsuperscript{246} Apparently, the specification’s use of the term “preferred” helped persuade the court that a machine using both a flute and a pipe was optional and held, “[w]e conclude that, in light of this disclosure, flutes are not \textit{essential}.”\textsuperscript{247} Because flutes were optional, Ag-Bag was found to infringe.\textsuperscript{248} The \textit{Versa v. Ag-Bag} holding worked to the advantage of the patentee. It can be seen that \textit{Versa v. Ag-Bag} is similar to \textit{Laitram}, in that both cases find that the term “preferred,” as it might appear in the specification, is synonymous with the word, “optional.”\textsuperscript{249}

XI. \textbf{Broadening Claim Scope Under Vitronics}

\textit{Vitronics} holds that claims should usually not be construed in a way that excludes the preferred embodiment.\textsuperscript{250} Table 3 discloses a number of cases where \textit{Vitronics} was applied, and where the result worked to the advantage of the patentee. Neomagic v. Trident Microsys, Inc.\textsuperscript{251} and Rhodia Chimie v. PPG Industrie\textsuperscript{252} represent dramatic examples of the application of \textit{Vitronics} to broaden or maintain claim scope.\textsuperscript{253}

\textbf{A. Neomagic v. Trident Microsys (Fed. Cir. 2002)}

\textit{Neomagic Corp. v. Trident Microsys, Inc.} concerned U.S. Pat. No. 5,703,806, which claimed an integrated circuit.\textsuperscript{254} The patent contained a section heading reading, “Description of the Preferred Embodiment(s),” as well as a statement applying to all the examples.\textsuperscript{255} This statement read, “Therefore, while the

\begin{footnotesize}
\footnote{244}{Brief of Defendant-Appellee at 10, Versa Corp. v. Ag-Bag Int'l Ltd., No 03-1445 (Fed. Cir. Sept. 19, 2003).}
\footnote{245}{Versa Corp., 392 F.3d at 1328–29.}
\footnote{246}{Id. at 1329 (citing '910 Patent col. 3 ll. 29–34) (emphasis added).}
\footnote{247}{Id.}
\footnote{248}{Id. at 1331.}
\footnote{249}{\textit{Comparing} Versa Corp. v. Ag-Bag Int'l Ltd., 392 F.3d 1325, 1329 (Fed. Cir. 2004) (concluding that because flutes were preferred they were not required), \textit{with} Laitram Corp. v. Cambridge Wire Cloth Co., 863 F.2d 855, 865 (Fed. Cir. 1989) (“References to a preferred embodiment, such as those often present in a specification, are not claim limitations.”).}
\footnote{250}{Vitronics Corp. v. Conexptronic, Inc., 90 F.3d 1576, 1584 (Fed. Cir. 1996).}
\footnote{251}{287 F.3d 1062 (Fed. Cir. 2002).}
\footnote{252}{402 F.3d 1371 (Fed. Cir. 2005).}
\footnote{253}{\textit{See} id. at 1377; \textit{Neomagic Corp.}, 287 F.3d at 1074.}
\footnote{255}{'806 Patent col. 2 ll. 55–56, col. 10 ll. 4–8.}
\end{footnotesize}
description above provides a full and complete disclosure of the preferred embodiments of the present invention . . . ."\textsuperscript{256}

The disputed claim term was "power supply."\textsuperscript{257} The accused infringer argued, and the lower court agreed, that "power supply" narrowly requires a constant voltage.\textsuperscript{258} The patentee argued that "power supply" more broadly encompasses devices that have a constant voltage and also devices with a fluctuating voltage.\textsuperscript{259}

The Federal Circuit observed that the preferred embodiment of the claimed power supply likely shows a degree of fluctuation.\textsuperscript{260} In observing that the preferred embodiment likely has some degree of fluctuation, the court cited Vitronics, writing that "[i]t is elementary that a claim construction that excludes the preferred embodiment 'is rarely, if ever, correct . . . ."\textsuperscript{261} The argument deriving from Vitronics was the only argument used by the Federal Circuit applied to the claim term "power supply."\textsuperscript{262} This case dramatically demonstrates that labeling an embodiment as preferred can work to the advantage of the patentee, particularly in situations where no other arguments are available.\textsuperscript{263}

\textbf{B. Rhodia Chimie v. PPG Industries (Fed. Cir. 2005)}

\textit{Chimie v. PPG Industries} concerned U.S. Pat. No. 6,013,234, which claimed silica particles.\textsuperscript{264} The disputed claim term was "dust-free and non-dusting."\textsuperscript{265} The accused infringer argued that this term narrowly meant no dust whatsoever.\textsuperscript{266} The patentee argued that the term more broadly meant very low dust, thus encompassing a range of dust levels.\textsuperscript{267} The Federal Circuit held for the broader interpretation, primarily on the basis of Vitronics.\textsuperscript{268} The opinion applied Vitronics, writing, "[b]ecause . . . '[n]o dust cloud whatsoever,' would not read on the preferred embodiment, we agree . . . that a person of ordinary skill in the art would not interpret this term in that manner."\textsuperscript{269}

Labeling an embodiment as a preferred embodiment worked to the advantage of the patentee.\textsuperscript{270} This case demonstrates that Vitronics can be the first argument to which the court turns in the exercise of claim construction.\textsuperscript{271}

\begin{itemize}
  \item \textsuperscript{256} Id. col. 10 ll. 4–6.
  \item \textsuperscript{257} NeoMagic Corp., 287 F.3d at 1069.
  \item \textsuperscript{258} Id. at 1073.
  \item \textsuperscript{259} See id. at 1074.
  \item \textsuperscript{260} Id.
  \item \textsuperscript{261} Id. (emphasis added) (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996)).
  \item \textsuperscript{262} See id.
  \item \textsuperscript{263} See id.
  \item \textsuperscript{264} 402 F.3d 1371, 1374–75 (Fed. Cir. 2005); Silica Pigment Particulates, U.S. Patent No. 6,013,234 col. 13 ll. 60–67 (filed June 7, 1995) (issued Jan. 11, 2000).
  \item \textsuperscript{265} Rhodia Chimie, 402 F.3d at 1374.
  \item \textsuperscript{266} Id. at 1375.
  \item \textsuperscript{267} Id.
  \item \textsuperscript{268} Id. at 1377.
  \item \textsuperscript{269} Id.
  \item \textsuperscript{270} See id. (concluding that "dust free" and "non-dusting" does not narrowly mean "no dust cloud whatsoever").
  \item \textsuperscript{271} See id. (omitting other theories of support for the Court's construction).
\end{itemize}
Table 3. Cases Where application of *Vitronics* Resulted in a Holding of Broader Claim Interpretation, Where the Broader Claim Scope Worked to the Advantage of the Patentee.

<table>
<thead>
<tr>
<th>Case</th>
<th>Patent</th>
<th>Disputed claim term</th>
<th>Narrow interpretation (or interpretation favored by accused infringer)</th>
<th>Broad interpretation (or interpretation favored by patentee)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Seating Co. v. USSC Group, Inc.(^{272})</td>
<td>5,888,038</td>
<td>Means for engaging being locked to said vehicle</td>
<td>Locked directly to the floor of the vehicle</td>
<td>Locked either directly or indirectly to the floor of the vehicle</td>
</tr>
<tr>
<td>Amgen Inc. v. Hoechst Marion Roussel, Inc.(^{273})</td>
<td>5,955,422</td>
<td>Purified</td>
<td>Purified from cell culture medium only</td>
<td>Purified from cells or from cell culture medium</td>
</tr>
<tr>
<td>Automed Technologies, Inc. v. Microfil, LLC(^ {274})</td>
<td>6,449,927</td>
<td>Vibratory dispenser</td>
<td>Exclusively vibratory</td>
<td>Exclusively vibratory or vibration in conjunction with gravity</td>
</tr>
<tr>
<td>Bowers v. Baystate Technologies, Inc.(^ {275})</td>
<td>4,933,514</td>
<td>Each</td>
<td>All</td>
<td>At least two groups</td>
</tr>
<tr>
<td>Burke, Inc. v. Bruno Independent Living Aids, Inc.(^ {276})</td>
<td>4,570,739</td>
<td>Floor pan</td>
<td>The floor pan must be in a single flat plane</td>
<td>The floor pan may be in a single flat plane or in multiple plane</td>
</tr>
<tr>
<td>Cytologix Corp. v. Ventana Medical Systems, Inc.(^ {277})</td>
<td>6,180,061</td>
<td>Separate electrical power connections</td>
<td>Connections must be off of a platform</td>
<td>Connections could be either on or off a platform</td>
</tr>
</tbody>
</table>

\(^{273}\) 314 F.3d 1313, 1319, 1348–49 (Fed. Cir. 2003).
\(^{274}\) 244 F. App'x 354, 356, 358 (Fed. Cir. 2007) (unpublished table decision).
\(^{275}\) 320 F.3d 1317, 1322, 1332 (Fed. Cir. 2003).
\(^{276}\) 183 F.3d 1334, 1335–36, 1340–41 (Fed. Cir. 1999).
\(^{277}\) 424 F.3d 1168, 1169, 1174–75 (Fed. Cir. 2005).
<table>
<thead>
<tr>
<th><strong>Dow Chemical Co. v. Sumitomo Chemical Co., Ltd.</strong>&lt;sup&gt;278&lt;/sup&gt;</th>
<th>4,499,255</th>
<th>Boiling point</th>
<th>Place thermometer in liquid</th>
<th>Place thermometer in vapor above liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gentry Gallery, Inc. v. Berkline Corp.</strong>&lt;sup&gt;279&lt;/sup&gt;</td>
<td>5,064,244</td>
<td>Fixed</td>
<td>Attachment with no part can move or pivot</td>
<td>Attachment where there is, or is not, moving or pivoting</td>
</tr>
<tr>
<td><strong>Glaxo Group Ltd. v. Apotex, Inc.</strong>&lt;sup&gt;280&lt;/sup&gt;</td>
<td>4,562,181</td>
<td>Purity of at least 95%</td>
<td>Impurities could include unwanted contaminants as well as additives</td>
<td>Impurities mean only unwanted contaminants</td>
</tr>
<tr>
<td><strong>Globetrotter Software, Inc. v. Elan Computer Group, Inc.</strong>&lt;sup&gt;281&lt;/sup&gt;</td>
<td>5,390,297</td>
<td>Prevent</td>
<td>Required the claim to require the software to actively prevent a program from running, when no license is available</td>
<td>Software can either allow or prevent a program from running, when no license is available</td>
</tr>
<tr>
<td>** Hoechst Celanese Corp. v. BP Chemicals Ltd.**&lt;sup&gt;282&lt;/sup&gt;</td>
<td>4,615,806</td>
<td>Stable</td>
<td>Resin must not change more than 50% in volume</td>
<td>Resin must not change more than 50% in diameter</td>
</tr>
<tr>
<td><strong>IEX Corp. v. Blue Pumpkin Software, Inc.</strong>&lt;sup&gt;283&lt;/sup&gt;</td>
<td>6,044,355</td>
<td>Skill group</td>
<td>Skill group consists of a group of agents</td>
<td>Skill group consists of one or more agents</td>
</tr>
<tr>
<td><strong>Invitrogen Corp. v. Biocrest Manufacturing, L.P.</strong>&lt;sup&gt;284&lt;/sup&gt;</td>
<td>4,981,797</td>
<td>Growth</td>
<td>Growth at 18°-32°, but never growth at higher temperatures</td>
<td>Growth at 18°-32°, with or without growth at a higher temperature</td>
</tr>
</tbody>
</table>

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<sup>278</sup> 257 F.3d 1364, 1367, 1374-75, 1378 (Fed. Cir. 2001).
<sup>279</sup> 134 F.3d 1473, 1474, 1476-77 (Fed. Cir. 1998).
<sup>280</sup> 376 F.3d 1339, 1342, 1346-47 (Fed. Cir. 2004).
<sup>281</sup> 362 F.3d 1367, 1368, 1379-81 (Fed. Cir. 2004).
<sup>282</sup> 78 F.3d 1575, 1579-81 (Fed. Cir. 1996).
<sup>284</sup> 327 F.3d 1364, 1366-69 (Fed. Cir. 2003).
<table>
<thead>
<tr>
<th>Case</th>
<th>Patent No.</th>
<th>Description</th>
<th>Claimed Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mattox v. Infotopia, Inc.</strong>&lt;sup&gt;285&lt;/sup&gt;</td>
<td>5,499,961</td>
<td>Support</td>
<td>Gliding on a support requires a support that is a guide track</td>
</tr>
<tr>
<td><strong>MBO Laboratories, Inc. v. Becton, Dickinson &amp; Co.</strong>&lt;sup&gt;286&lt;/sup&gt;</td>
<td>Reissue Patent No. 36,885</td>
<td>Adjacent</td>
<td>Required connection of the flange to the body “Next to,” i.e., either connected or non-connected</td>
</tr>
<tr>
<td><strong>Microsoft Corp. v. Multi-Tech Systems, Inc.</strong>&lt;sup&gt;287&lt;/sup&gt;</td>
<td>5,764,627</td>
<td>Speaker phone</td>
<td>Speaker phone requires a housing Speaker phone does not require a housing</td>
</tr>
<tr>
<td><strong>Moba, B.V. v. Diamond Automation, Inc.</strong>&lt;sup&gt;288&lt;/sup&gt;</td>
<td>4,519,494</td>
<td>Urge</td>
<td>Urge requires a downward force Urge more broadly means to move</td>
</tr>
<tr>
<td><strong>Nellcor Puritan Bennett, Inc. v. Masimo Corp.</strong>&lt;sup&gt;289&lt;/sup&gt;</td>
<td>4,934,372</td>
<td>Attenuated and filtered</td>
<td>Completely removed Completely removed or not eliminated altogether</td>
</tr>
<tr>
<td><strong>NeoMagic Corp. v. Trident Microsys, Inc.</strong>&lt;sup&gt;290&lt;/sup&gt;</td>
<td>5,703,806</td>
<td>Power supply</td>
<td>Power supply with constant voltage Power supply with constant voltage or a degree of fluctuation</td>
</tr>
<tr>
<td><strong>Oatey Co. v. IPS Corp.</strong>&lt;sup&gt;291&lt;/sup&gt;</td>
<td>6,148,850</td>
<td>First and second juxtaposed drain ports</td>
<td>Drain ports totally separate Drain ports either totally separate, or consisting of one port with a dividing wall (partition) inside</td>
</tr>
</tbody>
</table>

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<sup>286</sup> 474 F.3d 1323, 1326, 1328, 1333 (Fed. Cir. 2007).
<sup>287</sup> 357 F.3d 1340, 1342, 1353–54 (Fed. Cir. 2004).
<sup>288</sup> 325 F.3d 1306, 1309, 1316–17 (Fed. Cir. 2003).
<sup>289</sup> 402 F.3d 1364, 1365–67 (Fed. Cir. 2005).
<sup>290</sup> 287 F.3d 1062, 1069, 1073–74 (Fed. Cir. 2002).
<sup>291</sup> 514 F.3d 1271, 1272, 1275–76 (Fed. Cir. 2008).
<table>
<thead>
<tr>
<th>Patent No.</th>
<th>Description</th>
<th>Preferred Embodiment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,440,143</td>
<td>Mirror Only spherical mirrors</td>
<td>Spherical or toroidal mirrors</td>
<td></td>
</tr>
<tr>
<td>6,066,861</td>
<td>Mean grain diameter Mean grain diameter, where the mean was volumetric</td>
<td>Mean grain diameter, where the mean was number-based</td>
<td></td>
</tr>
<tr>
<td>5,110,046</td>
<td>Adhering material Adhering material requires bonding</td>
<td>Adhering material encompasses attachment by bonding and non-bonding methods</td>
<td></td>
</tr>
<tr>
<td>5,292,283</td>
<td>Form set Form sets must have one sheet of paper (single ply)</td>
<td>Form sets with either one sheet of paper (single ply) or several sheets of paper (multi-ply)</td>
<td></td>
</tr>
<tr>
<td>5,520,567</td>
<td>Engaging Sealing</td>
<td>To come in contact with</td>
<td></td>
</tr>
<tr>
<td>6,013,234</td>
<td>Dust-free and non-dusting Absolutely no dust Relatively free of dust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,602,987</td>
<td>Memory cell Every memory cell must be partitioned</td>
<td>Memory cells can be either partitioned or non-partitioned</td>
<td></td>
</tr>
<tr>
<td>6,282,574</td>
<td>Destination address Address encompasses only the final destination. Address encompasses intermediate and/or final destinations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


XII. VITRONICS IS A RELATIVELY WEAK DOCTRINE

Vitronics is a relatively weak doctrine. The available opinions demonstrate that Vitronics may fail to maintain claim scope when faced with arguments deriving from prosecution disclaimer, or when faced with arguments based on the ordinary and customary meaning of a claim term. However, the extraordinary power of Vitronics lies in the frequency with which the Federal Circuit has applied this case to maintain claim scope, and the extreme ease in drafting arguments based on Vitronics.

The closest the Federal Circuit has ever come to characterizing Vitronics as a weak doctrine comes from Cybersettle, Inc. v. National Arbitration Forum, Inc. The court found that it was not compelled to apply Vitronics to one particular claim (Claim 1) and held that it was acceptable to exclude the preferred embodiment from this claim. The court's rationale was as follows. The embodiment excluded from this claim was adequately encompassed by another claim (Claim 133). This holding worked to the disadvantage of the patentee.

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300 90 F.3d 1576, 1578, 1580, 1583 (Fed. Cir. 1996).
303 Keith A. Orso, On Excluding Preferred Embodiments, 90 J. PAT. & TRADEMARK OFF. SOCY. 918, 922 (2008) (positing that the Vitronics doctrine has “taken on a life of its own” and is disregarded only rarely).
304 243 F. App’x 603 (Fed. Cir. 2007) (unpublished table decision).
305 Id. at 607.
306 Id. at 608.
307 Id. at 604.
308 Id. at 610.
A. Vitronics Fails to Prevail Over Prosecution Disclaimer


North American Container, Inc. v. Plastipak Packaging, Inc. concerned Reissue patent RE 36,639, which claimed a plastic soda pop bottle, in particular, the base of the bottle. The disputed claim term was “generally convex.”

The patentee wanted the claim to broadly encompass bottles that are entirely convex, mixture of straight and convex, and generally convex with some concave portions. The basis for this argument was that the preferred embodiment (Figure 14 of the patent) showed a bottle with concave portions. The patentee argued that the claims should not exclude this preferred embodiment.

During prosecution, the patentee distinguished his invention from a bottle that was disclosed in the prior art (Dechenne’s U.S. Pat. No. 4,231,483). During prosecution, the patentee acknowledged that the prior art bottle had a concave portion.

Thus, prosecution disclaimer prevailed over an attempt to invoke Vitronics, and the result was a narrowing of claim scope to the patentee’s disadvantage. Slip Track Systems, Inc. v. Metal Lite, Inc. and Rheox, Inc. v. Entact, Inc. also disclose the fact-pattern where an attempt to invoke Vitronics (with the goal of increasing claim scope) failed in the face of prosecution disclaimer.

B. Vitronics Fails to Prevail Over the Ordinary and Customary Meaning of a Claim Term


Elekta Instrument S.A. v. O.U.R. Scientific International, Inc. concerned U.S. Pat. No. 4,780,898, which claimed a machine used for radiation therapy. Claim 1 read: “An arrangement in a gamma unit, comprising a plurality of radiation sources...having beam channels directed radially from said radiation

\[\text{References:} 309 \text{ 415 F.3d 1335, 1338 (Fed. Cir. 2005).} \\
310 \text{ Id. at 1344.} \\
311 \text{ Id. at 1344-45.} \\
312 \text{ Id. at 1345.} \\
313 \text{ Id.} \\
314 \text{ Id. at 1340.} \\
315 \text{ Id. at 1342-43.} \\
316 \text{ Id. at 1345-46.} \\
317 \text{ 113 F. App’x 930 (Fed. Cir. 2004) (unpublished table decision).} \\
318 \text{ 276 F.3d 1319 (Fed. Cir. 2002).} \\
319 \text{ Slip Track Sys., 113 F. App’x at 938 (Fed. Cir. 2004) (holding that a prosecution disclaimer outweighed the “general rule” to not exclude preferred embodiments when construing claims); Rheox, 276 F.3d at 1326-27 (Fed. Cir. 2002) (holding that the patentee could not claim preferred embodiments which were disclaimed during prosecution).} \\
320 \text{ 214 F.3d 1302, 1304 (Fed. Cir. 2000).} \]
sources toward a common focal point... only within a zone extending between
latitudes 30°–45°...”\textsuperscript{321}

The disputed claim term was “only.”\textsuperscript{322} What was disputed was the width
(angle) of the zone, that is, whether it was a narrow zone or a broad zone.\textsuperscript{323}

The accused infringer argued that the zone could extend only from 30°–45°
(narrow zone), on the basis of the ordinary and customary meaning, as understood by
the skilled artisan.\textsuperscript{324}

But the patentee argued that the zone could extend from 0° to a region that was
between latitudes 30°–45° (a broad zone), on the basis that the accused infringer’s
interpretation would exclude the preferred embodiment.\textsuperscript{325}

The Federal Circuit refused to apply \textit{Vitronics}, and held that the ordinary and
customary meaning of the claim term “only” served to unambiguously limit the sweep
to a narrow sweep.\textsuperscript{326}

Similarly, \textit{North American Container, Inc. v. Plastipak Packaging, Inc.},\textsuperscript{327}
\textit{Brocar Products, Inc. v. Bobrick Washroom,\textsuperscript{328}} and \textit{T.F.H. Publications, Inc. v. Hartz
Mountain Corp.},\textsuperscript{329} found that the meaning found by applying \textit{Vitronics} (a meaning
that does not exclude the preferred embodiment) could not trump over the ordinary
and customary meaning of a claim term.\textsuperscript{330}

To conclude, an attorney drafting an opinion letter or arguments to be submitted
in patent litigation, might expect any meaning compelled by applying \textit{Vitronics} to be
overwhelmed by the meaning found in the ordinary and customary meaning as
understood by the skilled artisan, and to be overwhelmed by any explicit context
(definitions and prosecution disclaimer).\textsuperscript{331} \textit{Vitronics} is a relatively weak doctrine.\textsuperscript{332}
However, the exceptional power of \textit{Vitronics} is self-evident from the data in Table
3.\textsuperscript{333} Table 3 demonstrates the high frequency by which \textit{Vitronics} has worked to the
advantage of the patentee.\textsuperscript{334}

\begin{footnotesize}
\begin{itemize}
  \item \textsuperscript{321} Arrangement in a Gamma Unit, U.S. Patent No. 4,780,898 col. 3 ll. 15–27 (filed Apr. 30,
  \item \textsuperscript{322} \textit{Elekta}, at 1306.
  \item \textsuperscript{323} \textit{Id.}
  \item \textsuperscript{324} \textit{Id.} at 1306–07.
  \item \textsuperscript{325} \textit{Id.} at 1307.
  \item \textsuperscript{326} \textit{Id.} at 1308.
  \item \textsuperscript{327} 415 F.3d 1335 (Fed. Cir. 2005).
  \item \textsuperscript{328} 527 F.3d 1379 (Fed. Cir. 2008).
  \item \textsuperscript{329} 67 F. App’x 599 (Fed. Cir. 2003) (unpublished table decision).
  \item \textsuperscript{330} \textit{Brocar Prods.}, 527 F.3d at 1383: \textit{N. Am. Container}, 415 F.3d at 1346: \textit{T.F.H. Publ’ns.}, 67 F.
  App’x at 603.
  \item \textsuperscript{331} See, e.g., \textit{N. Am. Container}, 415 F.3d at 1346 (prosecution disclaimer); \textit{Elekta Instrument
  meaning).
  \item \textsuperscript{332} See supra notes 304–330 and accompanying text (providing examples where the \textit{Vitronics}
doctrine did not prevail).
  \item \textsuperscript{333} See supra tbl.3.
  \item \textsuperscript{334} See supra tbl.3.
\end{itemize}
\end{footnotesize}
XIII. MEANS PLUS FUNCTION CLAIMS

The Federal Circuit has provided very little guidance on how Vitronics impacts means plus function claims. The available information is as follows. Vitronics, which warns against interpreting the claims to exclude a preferred embodiment, may be used in the construction of a means plus function claim. For means plus function claims, Vitronics is supplemented by Micro Chemical Inc. v. Great Plains Chemical. Micro Chemical v. Great Plains applies specifically to means plus function claims. This opinion held that when multiple embodiments in the specification correspond to the function recited in a means plus function claim, what is required is that the claim be construed broadly enough to encompass each and every one of the separate embodiments.

A. Application of Both Laitram and Vitronics, Where Laitram was Applied to One Preferred Embodiment, and Vitronics was Applied to a Different Preferred Embodiment

The following case provides a textbook example that summarizes some of the teachings of this essay. Anchor Wall Systems, Inc. v. Rockwood Retaining Walls, Inc. concerned U.S. Pat. No. 5,490,363, which claims a type of brick. Claim 1 reads, “A pinless composite masonry block comprising a front surface, a back surface, a top surface and bottom surface ... said block comprising a protrusion ...” The disputed claim term was “protrusion.” The accused infringer argued that “protrusion” narrowly encompasses only structures that have a central narrow portion. The court observed that the patent contained a preferred embodiment having a dogbone shape, and observed that, “[w]hile the protrusions may take any number of shapes, they preferably have a kidney or dogbone shape.” The court applied Laitram, and held that the claim must not be limited to dogbone-shaped protrusions.

Additionally, the district court found that the meaning of “protrusion” excludes circular protrusions. The court observed that one of the preferred embodiments (Figure 3A) took the form of a circular protrusion, and applied Vitronics, and held that the properly construed claim must not exclude circular protrusions. Table 4 summarizes the results of the dramatic holding of Anchor Wall v. Rockwood Retaining Walls.

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335 Vitronics Corp. v. Conceptronics, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996).
336 194 F.3d 1250 (Fed. Cir. 1999).
337 Id. at 1257.
338 Id. at 1258.
341 Anchor Wall, 340 F.3d at 1307.
342 Id. at 1305, 1308.
343 Id. at 1308 (citing the ’363 Patent col. 4 ll. 55–56).
344 Id. at 1308–09.
345 See id. at 1305.
346 See id. at 1309 (citing the ’363 Patent fig.3A).
Table 4. Application of *Laitram* to One Preferred Embodiment, and *Vitronics* to Another Preferred Embodiment, Where the Result was Increased Claim Scope.

<table>
<thead>
<tr>
<th>Preferred embodiment</th>
<th>Applied rule used to maintain claim breadth</th>
<th>Result of application of the rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protrusion having a central narrow portion, that is, dogbone shaped protrusions.</td>
<td><em>Laitram</em></td>
<td>Claims must not be limited to a protrusion having a central narrow portion.</td>
</tr>
<tr>
<td>Protrusion that is circular.</td>
<td><em>Vitronics</em></td>
<td>Claims must not exclude protrusions that are circular.</td>
</tr>
</tbody>
</table>

**Burke, Inc. v. Bruno Independent Living Aids, Inc.**,347 **IEX Corp. v. Blue Pumpkin Software, Inc.**,348 **Sandisk Corp. v. Memorex Products, Inc.**,349 and **Verizon Services Corp. v. Vonage Holdings Corp.**350 are other remarkable cases where the Federal Circuit separately applied both *Laitram* and *Vitronics* as a basis for maintaining claim scope, to the advantage of the patentee.351 These holdings demonstrate the striking power of labeling an example as “preferred,” where this labeling facilitates the patentee’s efforts to maintain or expand claim scope, and where these efforts take advantage of the *Laitram* and *Vitronics* holdings.

**B. Applying Laitram or Vitronics can Result in Invalidation of a Claim**

In viewing the statistics, labeling an example as “preferred” has worked to the advantage of the patentee, during litigation, in an overwhelming number of cases.352 However, the word “preferred” also introduces a measure of uncertainty in the patent.353 The following demonstrates that labeling an example as “preferred” can inspire the accused infringer to use arguments that threaten claim scope. In a nutshell, the application of *Laitram or Vitronics* can be used to broaden claim scope, causing the claim to fall under the invalidating umbrella of the prior art.354

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347 183 F.3d 1334 (Fed. Cir. 1999).
349 415 F.3d 1278 (Fed. Cir. 2005).
350 503 F.3d 1295 (Fed. Cir. 2007).
351 Verizon, 503 F.3d at 1302–03, 1305; Sandisk, 415 F.3d at 1285–86; Burke, 183 F.3d at 1341; IEX Corp., 122 F. App’x at 464–66.
352 See supra tbl.1, 3 (citing more than fifty cases where the court broadened the claim scope in light of a preferred embodiment).
353 See, e.g., In re Am. Acad. of Sci. Tech Ctr., 367 F.3d 1359, 1369–70 (Fed. Cir. 2004) (refusing to limit claim scope to the preferred embodiment and under the proper broad construction, the claims were anticipated).
354 E.g., id.
C. Application of Laitram or Vitronics to a Claim, Thereby Expanding Claim Scope, Resulting in the Claim Falling Under the Umbrella of the Prior Art

1. In re American Academy of Science Tech Center (Fed. Cir. 2004)

   In re American Academy of Science Tech Center 355 concerned U.S. Pat. No. 4,714,989.356 The patentee argued for narrow claim scope, with the goal of preventing the claim from falling under the invalidating effects of the prior art.357 Unfortunately for the patentee, the Federal Circuit noted that an embodiment found in the specification, which corresponded to this narrow claim scope, was expressly labeled as “preferred.”358 The opinion observed that “[t]he specification makes clear that the database simulator is a preferred embodiment.”359 After making this observation, the court applied Laitram to ensure that the claims had a scope broader than the “preferred embodiment.”360 As a result of the broad claim construction, the court caused the claim to fall under the invalidating effects of the prior art, and consequently held the claim to be invalid.361


   Apple Computer, Inc. v. Articulate Systems, Inc. concerned U.S. Pat. No. 5,469,540, which claimed a method for displaying windows on a computer screen.362 The disputed claim term was “window.”363 The accused infringer argued that the prior art, Adobe Photoshop software, which disclosed a menu, was prior art against the claim.364 The accused infringer characterized this menu as a window lacking any data.365 The goal of the accused infringer was to convince the court that the computer program known as Adobe Photoshop disclosed each and every element found in the claim.366

   The patentee argued as follows: For a window to be a window, it must contain data.367 The patentee presented the following argument to distinguish the claim from the prior art. The patentee argued that, where a window contained only a command, the command did not constitute “data,” and that this window was not really a window within the meaning set forth in its patent.368

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355 367 F.3d 1359 (Fed. Cir. 2004).
356 367 F.3d 1359, 1361 (Fed. Cir. 2004).
357 Id. at 1369, 1370.
358 Id. at 1369–70.
359 Id. at 1370 (emphasis added).
360 Id. at 1369–70.
361 Id. at 1370.
362 Id. at 17.
363 Id. at 21.
364 Id. at 18.
365 See id. at 22.
366 Id. at 19.
367 Id. at 21–22.
368 Id.
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The Federal Circuit referred to an example labeled as a *preferred embodiment*, and observed that this example *did not contain any data*[^69]. It only contained a command key labeled, “HUH?”[^70]. The court applied the rule of *Vitronics*, and held that the nature of this preferred embodiment “suggests the incorrectness of Apple’s proposed interpretation that the ‘data’ displayed in the windows of its invention does not include icons or command keys.”[^371]

The court rendered the claim invalid under the Adobe Photoshop prior art[^372]. To conclude, this case demonstrates that labeling an example as “preferred” introduces some level of uncertainty into the claims, resulting ultimately (and unfortunately) in the application of *Vitronics*, and a holding of claim invalidity[^373]. Similar unfortunate holdings can be found in *Seachange International, Inc. v. C-COR, Inc.*[^374] and *The Toro Co. v. Deere and Co.*[^375]. These cases demonstrate that labeling an example as a “preferred embodiment” can introduce an element of uncertainty in a patent, resulting ultimately (and unfortunately for the patentee) in invalidation of the claims[^376].

**D. Application of Laitram to the Prior Art Can Increase the Scope of the Invalidating Effects of the Prior Art**

1. Ultradent Products, Inc. v. Life-Like Cosmetics, Inc. (Fed. Cir. 1997)

*Ultradent Products, Inc. v. Life-Like Cosmetics, Inc.* concerned U.S. Pat. No. 5,098,303, which claimed the use of a polymer for bleaching teeth[^377]. The issue was whether the prior art (Rosenthal patent) rendered Ultradent’s claims invalid[^378].

The Federal Circuit pointed out that the Rosenthal prior art contained an example that was labeled as “preferred,” and specifically characterized this disclosure by writing, “the Rosenthal patent discloses the use of a carboxypolymethylene polymer, and *preferably...* the use of the glycerol-soluble neutralized salts of such a polymer.”[^379]

The lower court had earlier construed the scope of the Rosenthal prior art to encompass only the glycerol-soluble neutralized salts of the preferred embodiment[^380]. The Federal Circuit found the lower court’s claim construction to be in error, writing

[^69]: Id. at 22.
[^70]: Id.
[^71]: Id. at 22.
[^72]: Id. at 19, 24.
[^73]: E.g., id. at 22, 24.
[^74]: 413 F.3d 1361, 1377, 1379 (Fed. Cir. 2005).
[^75]: 355 F.3d 1513, 1319–21 (Fed. Cir. 2004).
[^76]: See id.; *Seachange*, 413 F.3d at 1377, 1379.
[^78]: *Ultradent*, 127 F.3d at 1067–68.
[^79]: Id. at 1068 (quoting Antiseptic Composition Containing Peroxide, Glycerol, and Carboxypolymethylene Polymer, U.S. Patent No. 3,657,413 col. 2 ll. 30–33 (filed Aug. 28, 1969) (issued Apr. 18, 1972) (emphasis added)).
[^80]: Id. at 1067.
that, "[t]he district court thus erred by construing the scope of the Rosenthal disclosure as limited to the preferred embodiment."381

In re Inland Steel Company provides a similar fact-pattern, where the recitation of "preferred embodiment," as it applied to one example of a prior art patent, served as the basis for increasing the invalidating power of the prior art patent.382 Ultradent and Inland Steel demonstrate that applying the Laitram holding can work to the disadvantage of the patentee.383 What is unusual about Ultradent is that Laitram was applied to a prior art patent, not to the disputed patent.384 The above cases provide a useful tool for litigators interested in invalidating a disputed patent.

The European Patent Office (EPO) has also addressed the concept that labeling an example as "preferred" can increase the claim-invalidating effects of the prior art.385 However, in the one available case, the EPO rejected the concept.386

XIV. FORM AND LOCATION OF THE TERM PREFERRED

The format or methods used for designating an example as "preferred" can influence whether or not the court applies Laitram or Vitronics to that example. The author suggests that the best way to label an example as preferred is to include the term "preferred" only once in the manner of a blanket statement, where it resides in a title reading, "DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT."

Where a patent fails to designate a specific example as "preferred" the court may decline to apply Laitram to that particular example.387 Honeywell International, Inc. v. ITT Industries, Inc. concerned U.S. Pat. No. 5,164,879, which claimed part of a fuel system.388 The term "preferred" or "preferable" occurred at three points in the specification, but they applied only to very specific components of the fuel system.389 The term "preferred" was not specifically associated with the embodiment that became the subject of the dispute.390 The court refrained from applying Laitram, and held for a narrow meaning of the disputed claim term, to the disadvantage of the patentee.391 Similarly, in TIVO, Inc. v. Echostar Communications Corp., the patentee argued that the limitations from a

381 Id.
382 265 F.3d 1354, 1364, 1366 (Fed. Cir. 2001).
383 See id.; Ultradent, 127 F.3d at 1068.
384 See Ultradent, 127 F.3d at 1068.
386 Id.
387 E.g., Honeywell Int'l, Inc. v. ITT Indus., Inc., 452 F.3d 1312, 1318, 1320 (Fed. Cir. 2006).
388 Id. at 1313.
390 Honeywell, 452 F.3d at 1318.
391 Id. at 1320.
figure (Figure 3) should not be imported into the claims on the basis that this figure was a preferred embodiment.\textsuperscript{9} The Federal Circuit refused this argument, in part, because of the fact that other figures were specifically labeled as “preferred” while Figure 3 was not specifically labeled as such.\textsuperscript{3}

\section{Where Each and Every One of the Examples Disclosed in a Patent is Labeled as “Preferred” the Court May Refuse to Apply \textit{Vitronics}}

\textit{Sinorgchem Co., Shandong v. International Trade Commission} concerned U.S. Pat. No. 5,117,063, which claimed a chemical reaction method.\textsuperscript{394} The patentee argued for a broader interpretation of the claim, referring the rule of \textit{Vitronics}.\textsuperscript{395} However, the opinion wrote as follows:

\begin{quote}
[\textit{this rule has particular force where the claims as construed do not encompass any disclosed embodiments. See Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1355 (Fed. Cir.1998) ("A patent claim should be construed to encompass at least one disclosed embodiment in the written description portion of the patent specification.") (emphasis added). This is not the case here. Example 10 was merely one of twenty-one distinct examples set out in the two specifications, all of which are described as "preferred embodiment[s]."}]
\end{quote}

The court refused to apply \textit{Vitronics}, to the disadvantage of the patentee.\textsuperscript{397}

If the patent fails to disclose any variations of the preferred embodiment, the court may refuse to apply \textit{Laitram}, and may limit the claims to that non-varied embodiment.\textsuperscript{398}

\textit{General American Transportation Corp. v. Cryo-Trans, Inc.}, concerned U.S. Pat. No 4,704,876.\textsuperscript{399} The term “preferred” occurred at many places in the specification, but it was always applied to one particular structure that was always the same one, disclosed over and over without variation.\textsuperscript{400} The court limited the claim to a structure found in this preferred embodiment, and rationalized its narrow claim construction on the basis that, “[t]his is not just the preferred embodiment of the invention; it is the only one described.”\textsuperscript{401} To view the big picture, claim construction militated by a context of implication (a repeated and consistent statement) trumped over the claim construction argued under \textit{Laitram}.\textsuperscript{402}

\textsuperscript{9} 516 F.3d 1290, 1301 (Fed. Cir. 2008), cert. denied, 129 S. Ct. 306 (2008).
\textsuperscript{396} Id.
\textsuperscript{395} 511 F.3d 1132, 1133–34 (Fed. Cir. 2007).
\textsuperscript{394} See id. at 1138.
\textsuperscript{393} Id. (citation omitted) (alteration in original).
\textsuperscript{392} Id.
\textsuperscript{391} See id. at 786–69.
\textsuperscript{399} Id. at 786–69.
\textsuperscript{401} Gen. Am., 93 F.3d at 770.
\textsuperscript{402} See id.
The Cryo-Trans fact-pattern also occurs in *Wang Laboratories, Inc. v. America Online, Inc.* where the court observed that one particular preferred structure was disclosed over and over, without variation.\(^{403}\) The *Wang* opinion held that, "[t]he usage ‘preferred’ does not of itself broaden the claims beyond their support in the specification."\(^{404}\)

**B. Claim Scope Can be Maintained Even Where No Part of the Specification is Designated as “Preferred”**

1. **Phillips v. AWH Corp. (Fed. Cir. 2005)**

*Phillips v. AWH Corp.* provides a holding similar to that of *Laitram*, except that *Phillips v. AWH* does not require that any example or embodiment be preferred.\(^{405}\) If a patent fails to label any example is preferred, the *en banc* case, *Phillips v. AWH Corp.*, can be invoked to prevent claim scope from being narrowed to features of any particular example or embodiment.\(^{406}\) *Phillips v. AWH* provides a rule broader than *Laitram*, and encompasses the rule of *Laitram*.\(^{407}\) This rule is as follows: "[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments . . . "\(^{408}\)

2. **Praxair, Inc. v. ATMI, Inc. (Fed. Cir. 2008)**

*Praxair, Inc. v. ATMI,*\(^{410}\) *Inc.* demonstrates yet another technique for preventing the importation of material from the specification to the claims. This technique is the labeling of an example in the specification by a phrase such as, "non-limiting example" or "without limitation."\(^{411}\) In the fact-pattern of *Praxair*, the adverse party argued that an element from the specification should be imported to the claims, on the basis that the writing in question took the form of a global comment.\(^{412}\) To

\(^{403}\) 197 F.3d 1377, 1383 (Fed. Cir. 1999); see *Gen. Am.*, 93 F.3d at 770 (“This [configuration] is not just the preferred embodiment of the invention; it is the only one described.”).

\(^{404}\) *Wang*, 197 F.3d at 1383 (citing *Gen. Am.*, 93 F.3d at 770, 772).

\(^{405}\) 415 F.3d 1303, 1326–27 (Fed. Cir. 2005) (en banc); see *id.* at 1328 (Lourie, J., concurring in part and dissenting in part) (“I also agree with the court that claims need not necessarily be limited to specific embodiments or preferred embodiments.”) (emphasis added).

\(^{406}\) See *id.* at 1326–27.

\(^{407}\) *Id.* at 1323.

\(^{408}\) *Id.*


\(^{410}\) 543 F.3d 1306 (Fed. Cir. 2008).

\(^{411}\) See *Praxair*, 543 F.3d at 1323 (concluding that phrases such as “in a broad embodiment” and “in a limited apparatus embodiment” prevailed over the global comment “typically” in deciding not to import the “severely limit” restriction).

\(^{412}\) *Id.*
provide background, the Federal Circuit periodically views certain types of writings in the specification as a "global comment," where the global comment has the effect of requiring a given limitation, e.g., a structure or characteristic, in each and every one of the claims. Global comments can be detected by the phrase, "The present invention . . . ," by residence of a statement in the Abstract of the patent, or by residence of the statement in a title or heading in the specification of the patent.

The Praxair opinion demonstrates that comments such as, "as a limited example," "without limitation," or "one particular embodiment," can counteract the effects of a global comment, thereby preventing the court from importing limitations from the specification to the claims.

XV. THE FEDERAL CIRCUIT ROUTINELY IGNORES STATEMENTS OF NON-LIMITATION

Patents often contain a statement requesting that the claims not be limited to examples disclosed in the specification. This statement occurs as a stand-alone statement, typically at the very end of the patent's specification, and not associated with any example. This type of statement has existed in patents from the earliest numbered U.S. patents (Table 5). Most of the patents reviewed in this article contain this conventional statement (Table 6).

Unfortunately, the case law conclusively demonstrates that the Federal Circuit rarely pays attention to these statements. Table 1 lists cases where Laitram was applied to maintain or broaden claim scope. Nearly all of the relevant patents contain the conventional statement requesting that claims not be limited to specific examples. But of all of the opinions cited in this article, only one opinion took note of the conventional statement. This opinion was Rexnord Corp. v. Laitram Corp., where the relevant patent was U.S. Pat. No. 5,634,550. The conventional statement took the form, "it is to be understood that the invention is not limited in its

413 Brody, Contexts of Implication, supra note 10, ¶ 5.
414 Id.
415 See Praxair, 543 F.3d at 1323.
416 See, e.g., infra tbl.5.
418 See infra tbl.5 (providing examples of patents containing non-limitation statements issued between 1836 and 1841).
419 See infra tbl.6 (providing recent examples of patents containing statements of non-limitation).
420 See supra tbl.1.
421 E.g., Humeral Nail for Fixation of Proximal Humeral Fractures, U.S. Patent No. 5,472,444 col. 5 ll. 40–41 (filed May 13, 1994) (issued Dec. 5, 1995) ("Although this description refers to a particular embodiment, the following claims are not intended to be so limited."); Personal Mobility Vehicle, U.S. Patent No. 4,570,739 col. 3 ll. 29–34 (filed Sept. 29, 1983) (issued Feb. 18, 1986) ("[S]pecific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately detailed structure.").
422 See Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1345 (Fed. Cir. 2001).
423 Id.
424 Id. at 1340.
application to the details of construction and the arrangements of components set forth in the following description or illustrated in the drawings."  

In addition to merely pointing out or observing the conventional statement, the opinion took another step by holding that the conventional statement was a reason for maintaining claim breadth.

In view of the Federal Circuit's near-universal practice of ignoring the statement requesting non-limitation, the author recommends including in the specification the following title or heading in order to ensure that *Laitram* can be invoked to maintain or broaden claim scope. The title is: "Detailed Description of the Preferred Embodiment."

<table>
<thead>
<tr>
<th>U.S. Patent No.</th>
<th>Issue date</th>
<th>Statement in the Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>10428</td>
<td>1836</td>
<td>&quot;It consists in the combination of a wheel having plane irons . . . it is for this combination, however it may be varied, that this applicant claims a patent upon this specification.&quot;</td>
</tr>
<tr>
<td>34429</td>
<td>1836</td>
<td>&quot;We have not given any particular dimensions or scale of proportions, as these may be changed without altering the principle of construction and may be safely left to the judgment of those conversant with such structures.&quot;</td>
</tr>
<tr>
<td>84430</td>
<td>1836</td>
<td>&quot;I do not limit myself to the precise construction above described, but desire the privilege of altering the same in any manner while I attain the same end by means substantially the same.&quot;</td>
</tr>
<tr>
<td>96431</td>
<td>1836</td>
<td>&quot;I do further declare that I do not intend by the foregoing description and claims, to limit myself to any particular measurement or precise form of the respective parts of this instrument but to vary these as I may think proper while the principle of action remains unchanged.&quot;</td>
</tr>
</tbody>
</table>

426 *Rexnord*, 274 F.3d at 1345.
427 See supra notes 420–426 and accompanying text.
430 Safety Steam-Engine, U.S. Patent No. 84 p. 3 ll. 77–81 (issued Nov. 23, 1836).
"I do hereby declare that I claim as my invention . . . without intending to confine myself to any particular pattern, or shape, in constructing them, but to vary them in any way I may think proper, while their construction and mode of operation remain substantially unchanged."

"Having thus described the nature of my invention, I would have it understood that although I have been particular in describing the processes and quantities of matter as practiced by me . . . I do not confine myself thereto . . . ."

"Having now described and particularly ascertained the nature of my invention . . . I do not confine or restrict myself to the precise details or arrangements which I have had occasion to describe or refer to, as many variations may be made therefrom without deviating from the principles or main features of my invention . . . ."

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5,602,987</td>
<td>&quot;While the embodiments of the various aspects of the present invention that have been described are the preferred implementation, those skilled in the art will understand that variations thereof may also be possible. Therefore, the invention is entitled to protection within the full scope of the appended claims.&quot;</td>
</tr>
<tr>
<td>5,884,096</td>
<td>&quot;While the preferred embodiment of the invention has been illustrated and described, it will be appreciated that various changes can be made therein without departing from the spirit and scope of the invention . . . Therefore, the scope of the invention is to be determined solely from the following claims.&quot;</td>
</tr>
</tbody>
</table>

433 Improvement in the Manufacture of Starch, U.S. Patent 2,000 p. 3 (issued Mar. 12, 1841).
434 Improvement in the Manufacture of Plain and Figured Fabrics, U.S. Patent 10,019 p. 3 (issued Sept. 13, 1853).
<table>
<thead>
<tr>
<th>Patent No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,624,140</td>
<td>&quot;The foregoing description and illustration of the preferred embodiments, however, is provided only to illustrate various specific configurations and applications of the invention. Many modifications and variations on the illustrated embodiments may be made without departing from the spirit and scope of the invention as indicated by the appended claims.&quot;</td>
</tr>
<tr>
<td>5,838,906</td>
<td>&quot;In the foregoing specification, the invention has been described with reference to a specific exemplary embodiment thereof. It will, however, be evident that various modifications and changes may be made thereunto without departing from the broader spirit and scope of the invention as set forth in the appended claims.... The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense, the invention being limited only by the provided claims.&quot;</td>
</tr>
<tr>
<td>5,928,197</td>
<td>&quot;The invention has been described with reference to a specific embodiment.... Therefore, this specific embodiment is to be interpreted as exemplary and not limiting, with the scope of protection being determined solely from the following claims.&quot;</td>
</tr>
<tr>
<td>4,624,140</td>
<td>&quot;The foregoing description and illustration of the preferred embodiments, however, is provided only to illustrate various specific configurations and applications of the invention. Many modifications and variations on the illustrated embodiments may be made without departing from the spirit and scope of the invention as indicated by the appended claims.&quot;</td>
</tr>
<tr>
<td>5,015,247</td>
<td>&quot;While the invention has been described with regards to the preferred embodiment, it is recognized that alternative embodiment may be devised which would not depart from the present invention.&quot;</td>
</tr>
</tbody>
</table>

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An adverse party interested in invalidating a patent can direct the court’s attention to an example labeled as “preferred,” argue that this example represents the best mode, and then try to convince the court that this particular example is non-enabling.443

A. Background

The best mode and enablement requirements have a statutory basis in 35 U.S.C. § 112.444 According to an early opinion from the U.S. Supreme Court,445 the best mode requirement has an origin in Wood v. Zimmer446 while enablement has an origin in Rex v. Arkwright.447 To satisfy the enablement requirement, the specification must enable the skilled artisan to make and use at least one embodiment of the invention, using the combination of information provided by the specification and the knowledge of the skilled artisan.448 As set forth by the case law, the best mode requirement further imposes the requirement to disclose specific materials and materials that were recognized by the inventors as necessary for making or using the best mode, providing that these materials and methods are beyond that which is understood by the skilled artisan.449 Where a patent fails to satisfy the requirements for best mode and enablement, the claims may be rendered invalid.450

The Federal Circuit typically equates preferred embodiments with the best mode.451 Bayer AG v. Schein Pharms, Inc., wrote that, “we have long held that compliance with the best mode requirement requires disclosing the inventor’s

443 E.g., Spectra Physics v. Coherent, Inc., 827 F.2d 1524, 1536–37 (Fed. Cir. 1987) (invalidating the patent because the best mode, which was designated “preferred” in the specification, was not enabled).
448 In re Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993).
449 Young Dental Mfg., Inc. v. Q3 Special Prods., Inc., 112 F.3d 1137, 1144 (Fed. Cir. 1997); Christianson v. Colt Indus. Operating Corp., 822 F.2d 1544, 1563 (Fed. Cir. 1987).
450 See Young Dental, 112 F.3d at 1144; Wright, 999 F.2d at 1563.
451 See Bayer AG v. Schein Pharms, Inc., 301 F.3d 1306, 1316 (Fed. Cir. 2002).
preferred embodiment . . .". High Concrete Structures, Inc. v. New Enterprise Stone and Lime Co., Inc. wrote that, “the best mode requirement precludes inventors ‘from applying for patents while at the same time concealing from the public preferred embodiments of their inventions . . .’. Teleflex, Inc. v. Ficosa North America Corp. also sets forth this equivalence, “[t]he best mode requirement creates a statutory bargained-for exchange . . . and the public receives knowledge of the preferred embodiments . . .” A number of other cases have also identified the best mode with the preferred embodiment, as cited. While the court has never explicitly held that examples labeled as “preferred" are, in fact, the best mode, labeling an example as “preferred” can be used to persuade the court that the example is, in fact, the best mode, as demonstrated below.

Typically, the specification discloses, at varying levels of detail, one or more examples of the invention that had been constructed or synthesized before the filing date of the patent application. Typically, the examples are working examples, but they can also include examples that are totally prophetic, or even examples that the applicant found were inoperative as of the filing date.

There is no requirement in patent law that all of the examples be operative. According to Atlas Powder Co. v. E.I. du Pont De Nemours & Co., “[e]ven if some of the claimed combinations were inoperative, the claims are not necessarily invalid. ‘It is not a function of the claims to specifically exclude . . . possible inoperative substances . . .’ Of course, if the number of inoperative combinations becomes significant . . . the claims might indeed be invalid.” Similarly, In re Angstadt and CFMT, Inc. v. Yieldup International Corp., held that it is not necessary for every permutation within a genus of generally operable devices be operable, in order for an inventor to obtain a claim that encompasses a genus of devices. In fact, Yieldup held that a party asserting inoperability of a claim must show that all of the disclosed embodiments are inoperative and non-enabled.

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452 Id.
454 299 F.3d 1313, 1330 (Fed. Cir. 2002).
456 See Pfizer, 518 F.3d at 1364 (“Typically, the best mode issue concerns the applicant’s failure to disclose a preferred embodiment, but not always.”).
458 Id. at 1576–77.
459 Id. (citations omitted).
460 537 F.2d 498 (C.C.P.A. 1976).
461 349 F.3d 1333 (Fed. Cir. 2003).
462 Id. at 1339; Angstadt, 537 F.2d at 502–03.
463 Yieldup, 349 F.3d at 1339 (emphasis added).
The ability for claims to encompass embodiments that are incapable of working is vividly revealed by the fact that claims can encompass technologies that did not exist as of the filing date.464

B. The Burden for Enablement Increases for the Best Mode

Where an example in the specification is found to be the best mode, the consequence is a more specific or particular burden for satisfying the enablement requirement.465 This increased particularity was set forth in Dana Corp. v. IPC Limited Partnership as, “[e]nablement looks to placing the subject matter of the claims generally in possession of the public. If, however, the applicant develops specific instrumentalities or techniques which are recognized ... as the best way ... the best mode requirement imposes an obligation to disclose that information to the public as well.”466 As set forth in Spectra-Physics, Inc. v. Coherent, Inc., the best mode requirement requires an identification of the best mode, e.g., by a name.467 But if a mere identification is not enough to allow the skilled artisan to practice the best mode, what is additionally required is details, e.g., procedures and materials, for carrying out the best mode.468 In White Consolidated Industries, Inc. v. Vega Servo-Control, Inc., the best mode was identified.469 But because the patent failed to disclose details on carrying out the best mode, the patent was rendered invalid.470

1. Spectra-Physics, Inc. v. Coherent, Inc. (Fed. Cir. 1987)

In Spectra-Physics, the court rendered a patent invalid for failure to disclose the best mode, where the best mode was identified in the patent’s specification by the term “preferred.”471 Spectra-Physics concerned U.S. Pat. No. 4,378,600, which claimed a laser.472 The specification disclosed that the laser can be made by brazing and that TiCuSil is the preferred brazing material.473 But the specification failed to provide details on the TiCuSil brazing method.474 In general, this type of failure can often be remedied by invoking the knowledge of the person having ordinary skill in the art.475 However, the problem facing the patentee was that TiCuSil brazing

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465 Dana Corp. v. IPC Ltd. P’ship, 860 F.2d 415, 419 (Fed. Cir. 1989).
466 Id. (quoting Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1532 (Fed. Cir. 1987)).
467 827 F.2d 1524, 1536 (Fed. Cir. 1987).
468 See id. at 1536–37.
469 713 F.2d 788, 789 (Fed. Cir. 1983).
470 See id. at 790 n.1, 792 (implying that the best mode was not enabled).
471 Spectra-Physics, 827 F.2d at 1537.
472 Id. at 1526; Gas Laser, U.S. Patent No. 4,378,600 col. 9 l. 1, (filed May 4, 1981) (issued Mar. 29, 1983).
473 ’600 Patent col. 6 ll. 22–27; see Spectra-Physics, 827 F.2d at 1536.
474 Spectra-Physics, 827 F.2d at 1537.
methods had failed to work in the hands of the inventors. The court identified this difficulty as, "[t]he known difficulty recognized by [the inventors] ... in working with TiCuSil as a braze material ...." The opinion observed that, "[t]he patent specifications make clear ... that the best mode ... was more than just brazing in general—it was TiCuSil active metal brazing." The opinion continued by writing that the patentee "acknowledges as much by its references to TiCuSil as the "preferred" brazing material ...."

An embodiment labeled as "preferred" was found by the court to implicate this embodiment as the best mode for carrying out the claimed invention. The opinion wrote that the patentee "did not disclose any details about its brazing process. It is this complete lack of detail which effectively resulted in its concealment." The court rendered the patent invalid for failing to disclose the best mode.

To conclude, labeling an embodiment as a "preferred embodiment" can work to the disadvantage of the patentee. An adverse party can argue that the term "preferred" implicates the embodiment as representing the best mode, and attempt to convince the court that the disclosure of the best mode was so poor as to constitute non-enablement of the best mode, or concealment of the best mode. Spectra-Physics, Inc. v. Coherent provides a useful approach (useful to the accused infringer) for litigators interested in invalidating a patent. Note also that arguments are available for convincing the court that a preferred mode is not the best mode.

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476 Spectra-Physics, 827 F.2d at 1530–31.
477 Id. at 1536 n.4.
478 Id. at 1536.
479 Id.
480 Id.
481 Id. at 1536–37.
482 Id. at 1536 (citation omitted).
483 Id. at 1537.
484 Id. at 1538.
485 See id. at 1536–38.
486 See id.
487 See e.g., Wahl Instruments, Inc. v. Acvious, Inc., 950 F.2d 1575 (Fed. Cir. 1991). Any process of manufacture requires the selection of specific steps and materials over others. The best mode does not necessarily cover each of these selections. To so hold would turn a patent specification into a detailed production schedule, which is not its function .... [T]he best mode inquiry is not so mechanical. A step or material or source or technique considered "best" in a manufacturing circumstance may have been selected for a non-"best mode" reason, such as the manufacturing equipment was on hand, certain materials were available, prior relationship with supplier was satisfactory, or other reasons having nothing to do with development of the invention.
488 See id. at 1581; see also, e.g., Bayer AG v. Schein Pharms., Inc., 301 F.3d 1306, 1321–22 (Fed. Cir. 2002) (holding that disclosure of the class of compounds, rather than the specific
CONCLUSION

An overwhelming majority of opinions from the Federal Circuit reveals that labeling an example as “preferred” works to the advantage of the patentee, where labeling an example as such resulted in an increase or maintenance in claim scope. To view the statistics disclosed in this article, applying Laitram or Vitronics worked to the patentee’s advantage in about sixty cases. In contrast, labeling an example as “preferred” backfired and worked against the patentee in only about five cases, for example, In re American Academy of Science Tech Center and Apple Computer v. Articulate Systems.

In view of these straightforward statistics, it is recommended that all attorneys and agents include, in the patent’s specification, the phrase, “Description of the Preferred Embodiment.” Typically, the very end of the written description part of patents includes a conventional statement requesting that the claims not be limited to the preferred embodiment. However, in preparing this article, the author discovered that the Federal Circuit almost always disregards this statement. This fact reinforces the author’s recommendation that inventors should ensure the availability of the Laitram holding by including the phrase, “Description of the Preferred Embodiment.”

On the other hand, labeling an example as a “preferred embodiment” introduces an element of uncertainty into the patent. The preferred embodiment can be turned against the patentee. This article demonstrates a number of arguments for taking advantage of the fact that an example is labeled as “preferred,” and using this “preferred” label as a basis for invalidating the claims.

A familiarity with this article, as well as with the author’s earlier article on claim construction, enables one to predict how the Federal Circuit will construe the claims in any patent being litigated, and provides strategies useful (for both sides) during litigation.

"preferred" compound, used to make an intermediate of the claimed chemical does not violate the best mode requirement because the choice of compound does not materially affect the properties of the claimed chemical); Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 964 (Fed. Cir. 2001) ("The best mode requirement does not compel disclosure of [the inventor's] unclaimed method for synthesizing [a chemical used in the patented method].").

488 See supra tbls.1, 3.
489 See supra notes 355–386 and accompanying text.
490 367 F.3d 1359, 1370 (Fed. Cir. 2004).
491 234 F.3d 14, 22 (Fed. Cir. 2000).
492 See supra tbls.5, 6 (providing early and recent examples of patents with statements of non-limitation).
"Preferred" is Frequently Recited in the Specifications of the Earliest U.S. Patents.

<table>
<thead>
<tr>
<th>U.S. Pat. No.</th>
<th>Issue Date</th>
<th>Quotation from the patent specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>26,495</td>
<td>1836</td>
<td>&quot;[But the short roller with but one cutter upon it will be preferable]&quot;</td>
</tr>
<tr>
<td>57,496</td>
<td>1836</td>
<td>&quot;For flax the fibers of which are of ordinary length, I prefer that they should be about one-eighth of an inch in diameter.&quot;</td>
</tr>
<tr>
<td>160,497</td>
<td>1837</td>
<td>&quot;If it be preferred the lead may be cast in sheets, and then rolled up, or it may be shotted of various sizes, but I prefer feathering, as exposing more surface with the least trouble.&quot;</td>
</tr>
<tr>
<td>177,498</td>
<td>1837</td>
<td>&quot;In machines of great power the circular or elliptic will be preferable to the spiral, which is represented in the drawing referred to.&quot;</td>
</tr>
<tr>
<td>10,008,499</td>
<td>1853</td>
<td>&quot;In order to make the bottom of the boot or shoe perfectly waterproof, it is preferable that the sole should be attached to the ‘upper’ by waterproof cement; but it may be sewed or pegged...&quot;</td>
</tr>
<tr>
<td>20,097,500</td>
<td>1858</td>
<td>&quot;Another (and perhaps preferable) form of bed bottom is exhibited in Fig. 2.&quot;</td>
</tr>
<tr>
<td>30,027,501</td>
<td>1860</td>
<td>&quot;I prefer the latter arrangement as it creates less friction that a continuous bearing...&quot;</td>
</tr>
<tr>
<td>30,057,502</td>
<td>1860</td>
<td>&quot;I prefer to place it upon the periphery of the middle propeller, as seen in the drawings, for the reasons that the shaft B has a firm support at this point...&quot;</td>
</tr>
<tr>
<td>40,013,503</td>
<td>1863</td>
<td>&quot;I prefer, however, when it is desired to close a tube, to substitute a cap for the thimble, such cap screwing into the plate in the same manner as the thimble.&quot;</td>
</tr>
<tr>
<td>40,050,504</td>
<td>1863</td>
<td>&quot;I prefer that there shall be one of these flutings opposite each of the perforations to b.&quot;</td>
</tr>
<tr>
<td>65,003,505</td>
<td>1867</td>
<td>&quot;The cylinder K is preferably cast as a shell, having suitable openings...&quot;</td>
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<thead>
<tr>
<th>Patent No.</th>
<th>Year</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>65,006</td>
<td>1867</td>
<td>&quot;It will also be obvious that the position of the parts may be somewhat varied, as, for instance, the knife might be made adjustable... but I prefer the arrangement shown, as it combines cheapness and simplicity...&quot;</td>
</tr>
<tr>
<td>70,013</td>
<td>1867</td>
<td>&quot;This I accomplish by enclosing the axle at a point just outside the hub, and preferably just beneath the springs, when used, or at a corresponding point in other wagons.&quot;</td>
</tr>
<tr>
<td>75,019</td>
<td>1868</td>
<td>&quot;I prefer the braided or knit tubes, however, as it is not necessary, when they are used, to have a seam on the side.&quot;</td>
</tr>
<tr>
<td>100,003</td>
<td>1870</td>
<td>&quot;In some cases, however, cast-iron may be employed for the outer shell of the furnace... but when using cast-iron to form the shell of the furnace I prefer to employ strong tie bolts and hoops of wrought iron or steel, for the purpose of retaining the several parts of the shell together in case of a fracture...&quot;</td>
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