

## NORTHERN TELECOM LTD. V. SAMSUNG ELECTRONICS CO.

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Congress established the Federal Circuit partly to harmonize patent jurisprudence. Nevertheless, in the context of the best mode doctrine, the court arguably failed to achieve uniformity for many years. Controversy attended the question of whether the best mode requirement applies to components that are not part of the claimed invention but nevertheless are highly beneficial in the invention's practical implementation.

In *Northern Telecom Ltd. v. Samsung Electronics Co.*,<sup>1</sup> the Federal Circuit dealt squarely with this issue. While perhaps not resolving the controversy entirely, the court made what may be its most explicit statement to date that the best mode requirement only extends as far as the claim limitations. On the whole, the greater fairness and certainty that should result from this rule trump any associated harms.

### I. BACKGROUND

#### A. The Best Mode Requirement

U.S. law requires all patent applications to:

contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.<sup>2</sup>

Further, this written description must "set forth the best mode contemplated by the inventor of carrying out his invention."<sup>3</sup>

The best mode requirement promotes full disclosure of innovations for which a patent is granted.<sup>4</sup> In the words of Judge Giles Rich, "the sole purpose of this . . . requirement is to restrain inventors from applying for

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1. 215 F.3d 1281 (Fed. Cir. 2000).

2. 35 U.S.C. § 112 (1994).

3. *Id.*

4. Roy E. Hofer, *The Best Mode Defense after the Federal Circuit's First Decade*, C785 ALI-ABA 1, 10 (1992).

patents while at the same time concealing from the public preferred embodiments of their inventions which they have in fact conceived.”<sup>5</sup> The purposes of the patent system would be frustrated if inventors were permitted to retain the details of their inventions as trade secrets.<sup>6</sup>

In practice, courts employ a two-step test to determine compliance with the best mode requirement. First, they determine whether or not the inventor preferred a particular mode of practicing the invention.<sup>7</sup> If he did, the inquiry shifts to whether or not he disclosed that mode adequately in view of the scope of the claims and the level of skill in the art.<sup>8</sup> A patent claim that fails this test is invalid.

Courts have handled the interaction of the best mode requirement with the scope of the claims inconsistently. Even though the Federal Circuit has helped stabilize the best mode doctrine by explicitly considering the effect of claim scope on the best mode requirement, uncertainty persists regarding how broadly the requirement is to be interpreted.<sup>9</sup> Some cases seem to indicate that the patentee must disclose everything necessary to achieve the benefit of the invention (the “Necessity Rule”),<sup>10</sup> while others take the narrower view that unclaimed subject matter is not subject to the requirement (the “Claims-Only Rule”).<sup>11</sup>

## B. Early Cases: Establishment of the Necessity Rule

### 1. *Flick-Reedy Corp. v. Hydro-Line Manufacturing Co.*<sup>12</sup>

*Flick-Reedy* was the first modern case to invalidate a patent claim for noncompliance with the best mode requirement.<sup>13</sup> *Flick-Reedy*’s patent covered a seal for “preventing leakage between the end of a cylinder tube and the head.”<sup>14</sup> The written description stated that one of the surfaces

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5. *In re Gay*, 309 F.2d 769, 772 (C.C.P.A. 1962).

6. *See Hofer*, *supra* note 4, at 10-11.

7. *Chemcast Corp. v. Arco Indus.*, 913 F.2d 923, 927-28 (Fed. Cir. 1990).

8. *Id.* at 928.

9. *See Roy E. Hofer & L. Ann Fitzgerald, New Rules for Old Problems: Defining the Contours of the Best Mode Requirement in Patent Law*, 44 AM. U. L. REV. 2309, 2331 (1995).

10. *See, e.g., Chemcast*, 913 F.2d 923; *Flick-Reedy Corp. v. Hydro-Line Mfg. Co.*, 351 F.2d 546 (7th Cir. 1965).

11. *See, e.g., Engel Indus. v. Lockformer Co.*, 946 F.2d 1528 (Fed Cir. 1991); *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585 (Fed. Cir. 1988). The terms “Necessity Rule” and “Claims-Only Rule” are those of the author and are not found in any cases.

12. 351 F.2d 546 (7th Cir. 1965).

13. *Hofer & Fitzgerald, supra* note 9, at 2321.

14. *Flick-Reedy*, 351 F.2d at 550.

joined at the seal was precision-machined with a “special tool.”<sup>15</sup> The patent contained no further description of the tool, and the inventor testified that he elected to keep this detail secret because of the difficulty of enforcing the patent.<sup>16</sup> The Seventh Circuit held that the failure to describe the special tool was a violation of the best mode requirement.<sup>17</sup>

In so doing, the Seventh Circuit created the Necessity Rule. The court did not explicitly consider the scope of the claims; instead, it merely noted that the close “sealing relation” between the cylinder and head was “an essential element of the patent” and that “the special tool was an aid” in obtaining this relation.<sup>18</sup> A broad but plausible interpretation of *Flick-Reedy* is that the best mode requirement mandates detailed disclosure of any item necessary to achieve the benefit of the claimed invention.<sup>19</sup> This is the essence of the Necessity Rule.

2. International Telephone and Telegraph Corp. (“ITT Corp.”) v. Raychem Corp.<sup>20</sup>

Employing a modified Necessity Rule, the First Circuit in *ITT Corp.* confined the scope of the best mode requirement to that which is “crucial” to the invention. Under *ITT Corp.*’s rule, some components do not have to be disclosed, even if they are associated with improved results, when the invention is put into practice. The patent at issue covered a type of two-layer polymer insulation for wires in jet aircrafts.<sup>21</sup> The defendant argued that the patent was invalid because the patentee did not disclose the formula of a proprietary compound included in the outer layer.<sup>22</sup> The First Circuit disagreed, affirming the district court’s finding that the addition of the compound “had no effect on the qualities of the finished insulated wire” and “was not crucial to the manufacturing process,” but merely made manufacturing the insulation more profitable by allowing faster extrusion of the outer layer.<sup>23</sup> Thus, the court held that the patent satisfied

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15. *Id.*

16. *Id.*

17. *Id.*

18. *Id.* (internal quotation marks omitted).

19. For such a broad interpretation, see Hofer & Fitzgerald, *supra* note 9, at 2322. See also Christopher S. Marchese, *Confusion, Uncertainty, and the Best Mode Requirement*, 2 FED. CIRCUIT B.J. 1, 18 (1992) (characterizing the *Flick-Reedy* court’s approach to the best mode requirement as “broad, sweeping in even that which is unclaimed”).

20. 538 F.2d 453 (1st Cir. 1976).

21. *Id.* at 454.

22. *Id.* at 459.

23. *Id.* at 460.

the best mode requirement.<sup>24</sup> It distinguished *Flick-Reedy* on the ground that the compound in the case at bar was “not essential to the production of the patented [product].”<sup>25</sup> Still, in so doing, it appeared that the court was, in principle, following the Necessity Rule.

### C. The Federal Circuit’s Attempt to Stabilize the Scope of the Best Mode Requirement

As with many other patent law doctrines, the best mode requirement lacked a coherent set of principles before the creation of the Federal Circuit.<sup>26</sup> The “essential” language of the First and Seventh Circuits was rather conclusory. Furthermore, the *Flick-Reedy* and *ITT Corp.* decisions neglected to focus on the precise language of the claims.

The Federal Circuit addressed the best mode requirement in a series of cases. Beginning with *DeGeorge v. Bernier*<sup>27</sup> and *Spectra-Physics, Inc. v. Coherent, Inc.*,<sup>28</sup> the court suggested a move toward limiting the best mode disclosure requirement to only those facets of the invention actually mentioned in the claims.<sup>29</sup> The court, however, proceeded to decide *Randomex, Inc. v. Scopus Corp.*<sup>30</sup> and *Chemcast Corp. v. Arco Industries*,<sup>31</sup> which cast doubt on the limitation and harked back to the Necessity Rule of *Flick-Reedy*. Numerous cases since have failed to establish a clear winner between these two viewpoints.<sup>32</sup> In the absence of an en banc or Supreme Court decision, the 1985 Federal Circuit opinion in *DeGeorge* is viewed as the controlling law.<sup>33</sup> But that case is not always followed. One might even say that there is an intra-circuit split on the issue of the scope of the best mode disclosure requirement.<sup>34</sup>

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24. *Id.*

25. *Id.*

26. *See* Hofer, *supra* note 4, at 9.

27. 768 F.2d 1318 (Fed. Cir. 1985).

28. 827 F.2d 1524 (Fed. Cir. 1987).

29. *See* Marchese, *supra* note 19, at nn.145, 154.

30. 849 F.2d 585 (Fed. Cir. 1988).

31. 913 F.2d 923 (Fed. Cir. 1990).

32. *See* Marchese, *supra* note 19, at 39.

33. *Newell Co. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988).

34. *Cf.* Marchese, *supra* note 19, at 39 (“[T]wo inconsistent positions have emerged on where to draw the line of disclosure.”). Marchese states that “[t]hese inconsistent cases do not rise to a split in the court. This is because in some cases, perhaps many, the two positions will yield the same result, depending of course on the facts.” *Id.*

### 1. Cases Applying the Claims-Only Rule

#### a) *DeGeorge v. Bernier*

In *DeGeorge*, the Federal Circuit narrowed the scope of the best mode requirement as interpreted in *Flick-Reedy* and *ITT Corp.* The claim at issue was directed toward an “[a]pparatus for controlling the operation of a data processing system printer.”<sup>35</sup> After construing the claim not to include a word processor, the court held that the inventor was not required to disclose the type of word processor with which the invention was intended to work.<sup>36</sup> Unlike the *Flick-Reedy* court, the Federal Circuit did not address the issue of whether a word processor was “essential” or “necessary” to the invention.<sup>37</sup> Instead, the court apparently considered the best mode requirement to apply only to that which is actually included in the claims, thus establishing the Claims-Only Rule.

#### b) *Spectra-Physics, Inc. v. Coherent, Inc.*

In *Spectra-Physics*, even though the Federal Circuit appeared to confine its focus to the claimed invention, it still found that the patentee had violated the best mode requirement.<sup>38</sup> The invention in *Spectra-Physics* was a type of ion laser.<sup>39</sup> Among the limitations of the claim at issue was a “means for attaching the distal edge of each of [a series of copper] cup rims along the inside wall of [a] tube.”<sup>40</sup> The patentee disclosed brazing, and specifically “TiCuSil” brazing, as one means for attaching the copper cups.<sup>41</sup> No details about TiCuSil brazing were, however, presented in the written description.<sup>42</sup> Because TiCuSil brazing was the patentee’s preferred way of attaching the cups, the Federal Circuit determined that the claim was invalid for failure to disclose the best mode in sufficient detail.<sup>43</sup> Importantly, however, *Spectra-Physics* accords with *DeGeorge* because the court did not require the patentee to disclose the best mode of

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35. *DeGeorge v. Bernier*, 768 F.2d 1318, 1320 (Fed. Cir. 1985). The “claim” at issue was actually an interference count, but its language exactly mirrored that of a claim in Bernier’s patent.

36. *Id.* at 1325.

37. *See Hofer & Fitzgerald, supra* note 9, at 2324.

38. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1526 (Fed. Cir. 1987).

39. *Id.*

40. *Id.* at 1527. *See generally* 35 U.S.C. § 112, ¶ 6 (1994) (permitting and describing the scope of means-plus-function claims). For an analysis of means-plus-function claims, *see generally* Eva M. Ogielska, Note, *IMS Technology, Inc. v. Haas Automation, Inc. & Kemco Sales, Inc. v. Control Papers, Inc.*, 16 BERKELEY TECH. L.J. 71 (2000).

41. *Spectra-Physics*, 827 F.2d at 1536.

42. *Id.* at 1537.

43. *Id.* at 1536.

practicing any item that was not (at least obliquely) mentioned in the claim.

2. *Cases Applying the Necessity Rule*

a) *Randomex, Inc. v. Scopus Corp.*

The *Randomex* court called for a broader scope for the best mode requirement. In *Randomex*, the court did apply the best mode requirement to an unclaimed component associated with the invention,<sup>44</sup> but based on the particular facts of the case, it did not find a violation.<sup>45</sup> The patent in question covered a device for cleaning disk packs for mainframe computers.<sup>46</sup> The court held that the best mode requirement applied to the detergent used to clean the disks, even though the detergent was not literally part of the claimed invention.<sup>47</sup> However, *Randomex*'s disclosure of "Randomex Cleaner No. 50281" was sufficient to meet the best mode requirement.<sup>48</sup>

b) *Chemcast Corp. v. Arco Industries*

The court in *Chemcast* was bolder than the *Randomex* court in departing from *DeGeorge*. The patent in *Chemcast* covered "[a] grommet for sealing an opening in a panel" with a locking portion made from a material with "a durometer hardness rating of more than 70 Shore A."<sup>49</sup> The patentee disclosed neither the particular material he had used in making the grommets, nor its hardness (75 Shore A); thus, the court determined that he violated the best mode requirement.<sup>50</sup> Writing for the court, Judge Mayer stated outright that "most of the cases in which we have said that the best mode requirement was violated addressed situations where an inventor failed to disclose nonclaimed elements that were nevertheless necessary to practice the best mode of carrying out the claimed invention."<sup>51</sup>

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44. *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 586 (Fed. Cir. 1988).

45. *Id.* at 590.

46. *Id.* at 586.

47. *Id.*

48. *Id.* (citing U.S. Pat. No. 3,803,660, col. 5, ll. 49-53 (issued Apr. 16, 1974)). In light of this holding, the application of the requirement to unclaimed subject matter may be dictum.

49. U.S. Pat. No. 4,081,879 (issued Apr. 4, 1978). The Shore A durometer measures soft rubber and other elastomeric materials. *Chemcast Corp. v. Arco Indus.*, 913 F.2d 923, 925 n.1 (Fed. Cir. 1990).

50. *Id.* at 928.

51. *Id.* (citing *Dana Corp. v. IPC Ltd. Pshp.*, 860 F.2d 415, 419 (Fed. Cir. 1988); *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1537 (Fed. Cir. 1987)). Judge Mayer is stretching things a bit when he cites *Spectra-Physics* in support of his statement of the Necessity Rule ("failure to disclose specific braze cycle constituting preferred

Judge Mayer's sweeping statement of the Necessity Rule is dictum because the locking material was actually claimed, but it indicates that, at the time, the Federal Circuit was not of one mind on the subject of the scope of the best mode requirement.

#### D. Continuing Inconsistency

More recent Federal Circuit cases have continued to differ in the weight accorded to claim scope in the best mode analysis. Cases that follow the Claims-Only Rule include *Engel Industries v. Lockformer Co.*<sup>52</sup> and *Christianson v. Colt Industries Operating Corp.*<sup>53</sup> Other cases consider the body of facts when deciding the best mode question and allow "weighing the materiality of the undisclosed, unclaimed subject matter."<sup>54</sup> These cases include *Wahl Instruments, Inc. v. Acvious, Inc.*<sup>55</sup> and *Dana Corp. v. IPC Limited Partnership.*<sup>56</sup> *Northern Telecom v. Samsung* contains the clearest pronouncement yet that the Claims-Only Rule best comports with section 112 of the patent statute.

## II. CASE SUMMARY

Northern Telecom brought an action against Samsung for infringement of U.S. Patent No. 4,030,967 ("the '967 patent") in the U.S. District Court for the Northern District of California. The district court entered summary judgment supporting the plaintiff's interpretation of the '967 patent's sole

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means of attachment violated best mode even though no particular attachment means claimed"). *Spectra-Physics* contained a means-plus-function claim, which according to 35 U.S.C. § 112 literally covers the means disclosed in the specification. Thus, brazing was effectively part of the claim.

52. 946 F.2d 1528, 1531 (Fed. Cir. 1991) ("The best mode inquiry is directed to what the applicant regards as the invention, which in turn is measured by the claims. Unclaimed subject matter is not subject to the disclosure requirements of § 112; the reasons are pragmatic: the disclosure would be boundless, and the pitfalls endless.").

53. 822 F.2d 1544, 1563 (Fed. Cir. 1987) (holding that the best mode requirement did not mandate disclosure of how to manufacture a complete M-16 rifle, when the patents claimed only certain individual rifle parts), *vacated on other grounds by Christianson v. Colt Indus. Operating Corp.*, 986 U.S. 800 (1988).

54. Marchese, *supra* note 19, at 43.

55. 950 F.2d 1575, 1580 (Fed. Cir. 1991) (stating that "[o]ne must look at . . . all of the circumstances in order to evaluate whether the inventor's failure to disclose particulars of manufacture gives rise to an inference that he concealed information which one of ordinary skill in the art would not know," but sustaining patent's validity in the face of failure to disclose certain details of the manufacturing process).

56. 860 F.2d 415, 420 (Fed. Cir. 1988) (invalidating patent on valve stem seal for failure to disclose fluoride treatment that improved seal's performance).

independent claim but invalidating the patent for noncompliance with the best mode requirement.<sup>57</sup>

### A. Technical Background

The '967 patent covered a "process for gaseous etching of aluminum and aluminum oxide, including an initial step of plasma etching in the presence of a gaseous trihalide comprising at least in part, a boron trihalide."<sup>58</sup> The etching process was useful in the manufacture of integrated circuit semiconductor devices.<sup>59</sup> In a typical manufacturing process, a silicon wafer is coated with a conductive layer of aluminum or an aluminum alloy, then covered with a mask of nonetchable material.<sup>60</sup> An aluminum etching process removes portions of the conductive layer according to a pattern in the mask. The mask is then removed, leaving a desired pattern of conductive material on the silicon surface.<sup>61</sup>

Northern Telecom developed and patented an etching process using a gas plasma containing one or more of the boron trihalides.<sup>62</sup> Use of the plasma led to sharper pattern definition and less toxicity than the older "wet etching" processes.<sup>63</sup> The boron trihalides were significant because they removed the naturally occurring protective layer of aluminum oxide, which had frustrated previous attempts at gaseous etching of aluminum.<sup>64</sup> With the oxide removed, certain components of the plasma react with the exposed sections of the conductive layer, rendering those sections easy to remove.<sup>65</sup>

An alternative gaseous etching process is sputter etching, which may be used on its own or in combination with plasma etching. In this process, opposite electrical charges are imparted to the gas and the metal surface. The ions in the gas are pulled toward the surface, striking it and physically dislodging atoms from the metal.<sup>66</sup> Reactive ion etching is a hybrid of the

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57. Northern Telecom Ltd. v. Samsung Elecs. Co., No. C95-0449, 1998 U.S. Dist. LEXIS 14265, at \*3 (N.D. Cal. Sept. 4, 1998). The best mode requirement is an objective inquiry into whether inventor's disclosure is adequate to enable one of ordinary skill in the art to practice the best mode of the invention, which depends on the scope of the invention and the level of skill in the relevant art. 35 U.S.C. § 112 (1994).

58. Northern Telecom Ltd. v. Samsung Elecs. Co., 215 F.3d 1281, 1283 (Fed. Cir. 2000); U.S. Pat. No. 4,030,967, col. 4, ll. 6-9 (issued June 2, 1977).

59. See *Northern Telecom*, 215 F.3d at 1283.

60. *Id.*

61. *Id.*

62. U.S. Pat. No. 4,030,967, col. 4, ll. 6-9 (issued June 2, 1977).

63. *Northern Telecom*, 215 F.3d at 1284.

64. *Id.*

65. *Id.*

66. *Id.*

two processes—positively charged particles in the plasma strike the negatively charged metal surface, while active radicals in the plasma react with the metal to form easily removable compounds.<sup>67</sup>

After removal of the mask and the etched metal, the final manufacturing step involves heating the device to a temperature above 400°C.<sup>68</sup> Such a high temperature can cause silicon to diffuse into the aluminum layer, however, leaving holes which are then filled by protrusions from the aluminum layer (“spearing”).<sup>69</sup> If the integrated circuit device includes multiple conductive layers, then spearing may cause short circuits between layers.<sup>70</sup> Using an aluminum silicon alloy in the conductive layer solves the spearing problem: when the aluminum is already saturated with silicon, no more silicon will diffuse into it from the silicon layer.<sup>71</sup> The ’967 patent did not disclose the alloy remedy for the spearing phenomenon.<sup>72</sup>

## B. Case History

### 1. *The District Court’s Ruling*

On the claim construction and infringement issues, the district court held in Northern Telecom’s favor. The court determined that the claimed “plasma etching” did not exclude ion bombardment.<sup>73</sup> Samsung had defended against infringement on the grounds that its process used the hybrid reactive ion etching. Samsung had interpreted Northern Telecom’s definition of “plasma etching” as excluding the ion bombardment component that is present in reactive ion etching.<sup>74</sup>

The district court also construed “aluminum and aluminum oxide” to exclude alloys such as aluminum silicon. But since a process that etched an aluminum alloy would etch both aluminum and the other component(s) of the alloy, the court held that such a process could still literally infringe the ’967 patent.<sup>75</sup>

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67. *Id.*

68. *Id.* at 1285.

69. *Id.*

70. *Id.*

71. *Id.*

72. *Id.* at 1286.

73. *Northern Telecom Ltd. v. Samsung Elecs. Co.*, No. C-95-449, 1996 U.S. Dist. LEXIS 21786, at \*44 (N.D. Cal. Sept. 13, 1996).

74. *See Northern Telecom*, 215 F.3d at 1285; *Northern Telecom*, 1996 U.S. Dist. LEXIS 21786, at \*47-48.

75. *See Northern Telecom*, 215 F.3d at 1285; *Northern Telecom*, 1996 U.S. Dist. LEXIS 21786, at \*49-50. The distinction between this and the previous finding is subtle. According to the court, the terms “aluminum and aluminum oxide” do not encompass

In a later proceeding, the district court held the '967 patent invalid for failure to disclose the best mode of practicing the invention.<sup>76</sup> The court based its conclusion on the fact that Northern Telecom did not disclose the use of an aluminum silicon alloy to prevent spearing.<sup>77</sup> It was undisputed that the inventors knew that aluminum silicon alloy was useful and even necessary for the manufacture of very-fine-line semiconductor devices.<sup>78</sup>

Northern Telecom appealed the best mode decision.<sup>79</sup> Samsung cross-appealed, challenging the court's claim construction and the ruling of literal infringement.<sup>80</sup>

## 2. *The Federal Circuit's Ruling*

In a unanimous opinion written by Judge Clevenger, the Court of Appeals for the Federal Circuit upheld the district court's claim construction and finding of literal infringement, but reversed the finding of violation of the best mode requirement. In affirming the infringement ruling, the court refused to accept Samsung's assertion that the additional limitation of an aluminum "layer" must be read into the claim. Samsung had relied, *inter alia*, on the argument that such a limitation was necessary to ensure that the '967 patent only covered processes that etched a significant amount of aluminum.<sup>81</sup> However, the court pointed out that simply mixing other components with aluminum would not render the accused process noninfringing.<sup>82</sup>

The court also rejected Samsung's proposed construction of the term "plasma etching" as excluding ion bombardment. The court held that plasma etching alone, as disclosed by Northern Telecom, was merely the

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aluminum alloys. *Id.* at \*47-48. But etching such alloys is still literal infringement because, in etching an aluminum alloy, one would inherently be etching aluminum. *Id.* at \*49-50. An interesting question, but one beyond the scope of this Note, is whether or not there is a line to be drawn between alloys (solutions of one metal in another) and crystalline compounds. Might "aluminum" be construed even to encompass a compound such as aluminum chloride?

76. *Northern Telecom*, 1998 U.S. Dist. LEXIS 14265, at \*37.

77. *Id.* at \*36-37.

78. *See Northern Telecom*, 215 F.3d at 1285-86; *Northern Telecom*, 1998 U.S. Dist. LEXIS 14265, at \*20-21. In this case, "very-fine-line" means having a line width of 2 microns. *Northern Telecom*, 1998 U.S. Dist. LEXIS 14265, at \*18.

79. *Northern Telecom*, 215 F.3d at 1283.

80. *Id.*

81. *Id.* at 1290.

82. *Id.* The court did not deny that the logical extension of this line of reasoning was that the patent covered even processes in which the etched material contained a "trace" amount of aluminum. *Id.* at 1291. However, "aluminum oxide" was still, independently, required for literal infringement. *Id.* at 1291-92.

preferred embodiment of the invention; it did not exclude the ion bombardment also found in Samsung's process.

Finally, the Federal Circuit reversed the district court's best mode ruling, noting that "the contours of the best mode requirement are defined by the scope of the claimed invention."<sup>83</sup> Because there was no requirement in the claims that the process be suitable for fine-line etching, the use of an aluminum silicon alloy was unnecessary for the performance of the claimed process.<sup>84</sup> Having thus determined that the component at issue was not within the scope of the best mode requirement, the court did not need to reach the factual issues of whether or not the inventor possessed a preferred mode, and whether or not he disclosed it.<sup>85</sup>

### III. DISCUSSION

*Northern Telecom* apparently resolves the best mode scope controversy in favor of the Claims-Only Rule. This result entails a sacrifice of the public's right to some disclosure, but it also renders the best mode requirement more equitable and patent litigation more predictable.

#### A. *Northern Telecom* Adds Weight to the Precedent Favoring the Claims-Only Rule

##### 1. *The District Court Followed the Necessity Rule*

The district court's opinion echoed the sentiments of the *Flick-Reedy*, *Randomex*, and *Chemcast* courts. The district judge began by stating that patent validity depends on disclosure of "the best method known for carrying out the claimed invention and . . . the best physical way to make use of it."<sup>86</sup> These are two different statements, and only the first unquestionably follows from the statutory language directing that the inventor "shall set forth the best mode contemplated by the inventor of carrying out his invention."<sup>87</sup> "[T]he best physical way to make use of" the invention is ambiguous—it could be a mere rewording of "the best method known for carrying out the claimed invention," or it could be a mandate for detailed disclosure of the circumstances in which the invention is preferably employed. Subsequent statements and the court's holding of invalidity point toward the latter interpretation. While paying lip service to the principle that "the best mode requirement is limited by the scope of a patent's

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83. *Id.* at 1286.

84. *Id.* at 1287-88.

85. *Id.* at 1289.

86. *Northern Telecom*, 1998 U.S. Dist. LEXIS 14265, at \*10.

87. 35 U.S.C. § 112 (1994).

claims[.]”<sup>88</sup> the court nonetheless held that “because aluminum alloy was necessary to achieve the best results from the plasma-etching process,” it should have been disclosed.<sup>89</sup> The court went on to cite *Chemcast* and *Randomex* in support of this proposition.<sup>90</sup>

## 2. *The Federal Circuit Followed the Claims-Only Rule*

In construing the best mode requirement not to extend to the aluminum silicon alloy, the Federal Circuit came down on the side of the Claims-Only Rule. The court cited *DeGeorge* and *Spectra-Physics* in support of its assertion that “unclaimed matter that is unrelated to the operation of the claimed invention does not trigger the best mode requirement.”<sup>91</sup> The court determined that the claim at issue was for a method of etching aluminum, not a complete aluminum-based microelectronic device. Therefore, the fact that the inventor, when using the method in its intended context, preferred to use it on an aluminum alloy is irrelevant.<sup>92</sup>

The *Northern Telecom* result increases the likelihood that future cases will confine the scope of the best mode requirement to that which is part of or directly related to the claims. This additional case in the *DeGeorge* line makes it more difficult for future district courts and circuit panels to distinguish their cases and apply a broader conception of the best mode requirement.<sup>93</sup> On a more basic level, *Northern Telecom* clarifies the message of *DeGeorge* and *Spectra-Physics* by explicitly endorsing the Claims-Only Rule.<sup>94</sup>

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88. *Northern Telecom*, 1998 U.S. Dist. LEXIS 14265, at \*23.

89. *Id.* at \*24-25.

90. *Id.* at \*34-36 (citing *Chemcast v. Arco Indus.*, 913 F.2d 923, 928 (Fed. Cir. 1990); *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 588 (Fed. Cir. 1988)).

91. *Northern Telecom Ltd. v. Samsung Elecs. Co.*, 215 F.3d 1281, 1289 (Fed. Cir. 2000) (citing *DeGeorge v. Bernier*, 768 F.2d 1318, 1325; *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1526, 1536). The panel appears to have viewed the beneficial effect of the aluminum silicon alloy, realized only in a subsequent step after the claimed etching process is complete, as “unrelated to the operation of” the invention.

92. *Northern Telecom*, 215 F.3d at 1289.

93. At least one subsequent case has explicitly followed *Northern Telecom*'s rule and perhaps even extended it. See *Eli Lilly & Co. v. Barr Lab., Inc.*, 222 F.3d 973, 984 (Fed. Cir. 2000) (holding that failure to disclose a preferred recrystallization solvent in patents claiming a compound and a process for making it was not a best mode violation “because the patents simply do not claim a recrystallization process or a recrystallization solvent”). Despite his previous statements apparently favoring the Necessity Rule, Chief Judge Mayer joined in the *Eli Lilly* opinion. Cf. *supra* text accompanying note 51.

94. See *DeGeorge*, 768 F.2d at 1325 (stating only that “[b]ecause [a] properly construed count does not include a word processor, failure to meet the best mode requirement here should not arise from an absence of information on the word processor”); *Spectra-Physics*, 827 F.2d at 1533, 1537 (holding that the best mode requirement man-

## B. *Northern Telecom* May Serve to Establish the *Flick-Reedy* Approach Conclusively in Object-of-Process Cases

Because it is the first “object-of-process” case to come before the Federal Circuit, *Northern Telecom* may set a conclusive standard for the scope of the best mode requirement in this narrow category of cases.<sup>95</sup> Future courts deciding whether or not a patentee must disclose the best material upon which to perform a claimed process will most likely look to this case and answer in the negative. In light of the general confusion surrounding the scope of the best mode requirement, a district court would probably be relieved to have a fact pattern that parallels a particular Federal Circuit case so that it could avoid having to split hairs between the Claims-Only and Necessity cases.

It is not clear, however, that “object-of-process” is even a worthwhile categorization of patent cases. First, as evidenced by the dearth of past cases on point, the issue does not come up very often.<sup>96</sup> Second, and more importantly, the object-of-process fact pattern has little logical significance beyond being a species of the genus of things necessary to achieve the benefit of the invention. It would be difficult to advance a principled justification for a per se rule in object-of-process cases coupled with a more vague standard in cases involving other types of generally beneficial but unclaimed elements. Therefore, this aspect of *Northern Telecom*, while conclusive, is not very significant.

## C. Best Mode May Now Be More of a Question of Law

In the past, courts have often unwittingly merged the scope of the best mode requirement with the two-step best mode inquiry. As noted above, the inquiry consists of two questions of fact: did the inventor possess a preferred mode, and if so, did he disclose it? The scope of the requirement

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dated disclosure of the details of a process by which the claimed “means for attaching” was formed, but never making an explicit statement about best mode scope); *but see* Hofer, *supra* note 4, at 41 (“Unclaimed subject matter is not subject to the best mode disclosure requirement”) (citing *Engel Indus. v. Lockformer Co.*, 946 F.2d 1528, 1531). *Northern Telecom* had not been decided at the time of Hofer’s writing.

95. An “object-of-process” case (the author’s term) is one in which the issue is whether or not the patentee must disclose the preferred object on which to perform a claimed process.

96. As an illustration of this point, none of the thirty-six cases cited by Hofer in his summary of the Federal Circuit’s best mode jurisprudence deals with the object of a claimed process. *See* Hofer, *supra* note 4, at *passim*.

had, on occasion, been treated as a legal question,<sup>97</sup> but as the Federal Circuit stated in *Chemcast*, the best mode inquiry at large has been treated as a question of fact:

Assessing the *adequacy* of the disclosure, as opposed to its *necessity*, is largely an objective inquiry that depends upon the scope of the claimed invention and the level of skill in the art. Notwithstanding the mixed nature of the best mode inquiry, and perhaps because of our routine focus on its subjective portion, we have consistently treated the question as a whole as factual.<sup>98</sup>

After *Northern Telecom*, claim construction is clearly crucial to determining the scope of the best mode requirement. Claim construction is, of course, a question of law since *Markman v. Westview Instruments*.<sup>99</sup> After a *Markman* hearing, it will probably be obvious whether or not disclosure of the best mode is required for the component at issue.<sup>100</sup> Thus, the *Markman* hearing, already of tremendous importance in most patent cases,<sup>101</sup> will take on even greater significance.

The best mode two-step factual inquiry remains intact. The trier of fact still needs to determine whether or not the inventor preferred a particular embodiment of the claimed invention and whether or not he disclosed this embodiment.<sup>102</sup> Judicial determination of the scope of the requirement merely defines the product or process components to which this inquiry is applied.

Ultimately, though, if the jury had any control over the scope issue before *Northern Telecom*, that control appears to be gone. Under the Claims-Only Rule, it is hard, perhaps impossible, to think of a case in which the claim construction could fail to be dispositive of best mode scope. Thus, the court's conclusions regarding claim scope are controlling. Because appellate courts may more easily overturn conclusions of law than findings

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97. See, e.g., *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 588-90 (Fed. Cir. 1988) (treating the scope of the requirement as part of the court's jury question drafting process, rather than as an issue for the jury itself to resolve).

98. *Chemcast v. Arco Indus.*, 913 F.2d 923, 928 (Fed. Cir. 1990) (emphasis in original).

99. 517 U.S. 370, 372 (1996) (declaring claim construction to be exclusively an issue for the court).

100. A *Markman* hearing is a proceeding at which a court determines the scope of a patent's claims. ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 249 (2d ed. 2000).

101. *Id.*

102. *Northern Telecom Ltd. v. Samsung Elecs. Co.*, 215 F.3d 1281, 1286 (Fed. Cir. 2000) (citing *Chemcast*, 913 F.2d at 928).

of fact,<sup>103</sup> *Northern Telecom* probably portends greater involvement for the Federal Circuit as well.<sup>104</sup>

#### **D. The Federal Circuit Sacrificed Some Disclosure for Greater Certainty**

The rule announced in *Northern Telecom* renders judicial determination of best mode scope more predictable than it would be under the Necessity Rule. Formerly, if they followed the Necessity Rule, courts (or juries) engaged in the highly discretionary process of deciding whether or not the component at issue was necessary to achieve the benefit of the claimed invention. Under the Claims-Only Rule, fortified in *Northern Telecom*, district courts, patent drafters, and potential litigants possess more guidance for assessing the scope of the best mode requirement. Courts can avoid having to gauge the necessity of a component that is outside the scope of the claims, and drafters and potential litigants will not have to guess the court's decision on such a discretionary issue. The clarity of the Claims-Only Rule is still limited by the uncertainty of claim construction, but it is a step in the right direction.

In exchange for this increased clarity, the public loses the right to some beneficial technical disclosure. The *Northern Telecom* district judge would probably wonder what good Northern Telecom's disclosure is if one skilled in the art cannot obtain any real benefit from it, for one would not be able to make very-fine-line microelectronic devices without independently discovering the necessity of the alloy. This loss must be taken into account when weighing the policy implications of the *Northern Telecom* decision.

Still, the Federal Circuit's approach is arguably the most logical and fair one because, if there is a principled line to be drawn anywhere in determining the scope of the best mode requirement, it is at the claim boundaries. The fact is that Northern Telecom claimed a process for etching aluminum and aluminum oxide, not a process for making a fine-line microelectronic device. Since Northern Telecom's right to exclude extends no further than the metes and bounds of its patent claim, it would be

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103. Federal appellate courts review trial courts' conclusions of law de novo, while they adopt the stricter "clearly erroneous" standard when considering findings of fact. BARBARA ALLEN BABCOCK & TONI M. MASSARO, *CIVIL PROCEDURE: CASES AND PROBLEMS* 1120-21 (1997).

104. See generally William C. Rooklidge & Matthew F. Weil, *Judicial Hyperactivity: The Federal Circuit's Discomfort with its Appellate Role*, 15 *BERKELEY TECH. L.J.* 725 (2000) (arguing that the Federal Circuit has shown a strong propensity to expand its own role in the patent infringement adjudication process).

incongruent to hold it to a broader disclosure requirement. It would also be inequitable, given that patents are issued in exchange for public disclosure of the invention. The government should not mandate disclosure broader in scope than the patent that it issues. If Northern Telecom had actually claimed a process of making a microelectronic device or a product consisting of the device itself, it naturally should have disclosed the alloy, but a narrower disclosure requirement should apply to the narrower etching process patent.<sup>105</sup>

The diminution in litigation-related transaction costs due to a more transparent best mode doctrine may counterbalance the public's loss of disclosure. Making the best mode result turn largely on the outcome of the *Markman* hearing will probably not in itself reduce litigation. But a clarified rule that best mode scope parallels claim scope will likely preclude attempts like Samsung's to raise the best mode defense with respect to peripheral components not directly related to the claimed invention. Under the *Flick-Reedy* rule, a defendant could almost always argue that an undisclosed component distantly related to the claimed invention was necessary to achieve the invention's full benefit.<sup>106</sup> Requiring the disclosure only of the invention as claimed will tend to discourage such hand-waving arguments in the future.

#### IV. CONCLUSION

The Federal Circuit, and the regional circuits before it, established two reasonably distinct lines of cases dealing with the scope of the best mode requirement. *Northern Telecom v. Samsung* clearly augments the line of cases applying the best mode requirement only to that which is in the claims. The district court's understandable adherence, given the doctrinal ambiguity, to the cases requiring disclosure of anything necessary to achieve the benefit of the invention did not withstand appeal.

*Northern Telecom* helps to clarify the best mode doctrine. But given the persistence of the Necessity Rule in the face of Claims-Only Rule

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105. Incidentally, Northern Telecom's patent drafter practiced in a country (Canada) where the patent system has no best mode requirement. This probably explains what a U.S. patent drafter might call his incautious decision not to disclose the alloy. The increasing global harmonization of patent law may eventually lead to the abolition of the best mode requirement in the United States, rendering this controversy moot. See generally MERGES ET AL., *supra* note 100, at 319-21.

106. See, e.g., *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 586 (Fed. Cir. 1988) (applying the best mode requirement to a detergent used with a disk cleaning device, even though only the cleaning device was claimed, in accord with the defendant's argument).

precedent, this case may not ultimately settle the controversy. At the very least, however, it establishes a clear but narrow rule that the preferred object of a claimed process need not be disclosed.

While the drawbacks of the Claims-Only Rule are evident, the benefits appear to outweigh them. The rule comes at the cost of some disclosure, to the public's certain detriment. It also puts more weight on the *Markman* hearing, gives more power to the judge in a jury trial of infringement, and grants the Federal Circuit a freer hand in managing patent cases, all of which may or may not be beneficial. Ultimately, though, because the rule increases potential litigants' certainty regarding the scope of the best mode requirement and because it aligns the requirement's scope with the scope of patent protection, *Northern Telecom's* rule represents sound public policy.

