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An Initial Comment on Ariad: Written Description and the Baseline of Patent Protection for After-Arising Technology¹

Kevin Emerson Collins²
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On March 22, 2010, the Court of Appeals for the Federal Circuit issued its *en banc* opinion in *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.* addressing patent law's written description requirement.³ For over a decade, the judges of the Federal Circuit have waged a public battle about the written description requirement.⁴ The battle has been fought on many fronts. Judges have disagreed on whether there is statutory support in section 112, paragraph 1 of the Patent Act for a written description requirement as applied to original claims. They have disagreed on whether such a written description requirement is inherent in historical Supreme Court and Federal Circuit case law. They have disagreed on whether the written description doctrine has any useful role to play in restricting the patentability of original claims above and beyond the restrictions already imposed by the enablement doctrine. In *Ariad*, the Federal Circuit seeks to end the statutory and precedential skirmishes while staying the course on the substance of the written description requirement. The nine-judge majority reaffirms that the written

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² Associate Professor of Law, Indiana University Maurer School of Law. I thank Chris Holman, Mark Janis, and Oskar Liivak for their helpful and quickly rendered comments.

³ 2010 WL 1007369 (Fed. Cir. March 22, 2010) (*en banc*).

⁴ For written description cases with vociferous dissents from denials of rehearings *en banc*, see *Enzo Biochem, Inc. v. Gen-Probe Inc.* 212 F.3d 956 (Fed. Cir. 2002); *Univ. of Rochester v. G.D. Searle & Co., Inc.*, 375 F.3d 1303 (Fed. Cir. 2004); *Lizard Tech, Inc. v. Earth Res. Mapping, Inc.* 433 F.3d 1373 (Fed. Cir. 2006).

description requirement applies to original claims and that its scope and purpose are to be determined by examining the relevant Federal Circuit precedent. Indeed, but for the fact that it removes the uncertainty caused by the vociferous dissents in earlier written description opinions, the *en banc* opinion in *Ariad* could readily be framed as a non-event in the evolution of the written description requirement.⁵ However, the importance of removing the uncertainty about the existence of a written description requirement as applied to original claims should not be lightly dismissed. Before *Ariad*, the uncertainty channeled much of the scholarly conversation about the written description doctrine into a binary debate, pitting those who it applied to original claims versus those who believed that it did not. After *Ariad*, the stage is now set for greater participation in more nuanced conversations about the role that the written description requirement does and should play in curtailing patent protection. *Ariad* may end one facet of the debate over written description, but it would be a lost opportunity if *Ariad* were interpreted to end the debate over written description more broadly and cut off these more nuanced conversations.

Leaving the statutory and precedential issues behind, this short Essay initiates these post-*Ariad* conversations on the written description requirement. By articulating three propositions and drawing a conclusion from them, it sketches one line of inquiry that has not yet been pursued but that is essential to understanding and calibrating the written description requirement.

1. To date, the principal impact of the written description requirement has been to restrict the reach of literal claim scope into after-arising technology.
2. The import of the written description requirement cannot be meaningfully examined without initially understanding the baseline of protection for after-arising technology established by a diverse collection of traditionally distinct patent doctrines.
3. This baseline of patent protection for after-arising technology is today poorly understood. This lack of understanding is due in part to conceptual gaps in the distinct doctrines that have not been noticed and in part because the impacts of the distinct doctrines have been considered separately rather than collectively.

⁵ Assuming, of course, that the Supreme Court does not grant certiorari.

Conclusion: The next step in scholarly work on written description should therefore be to foster a more complete understanding of this baseline—both by drilling down to analyze the effect of particular doctrines on the reach of patent protection into after-arising technology and by adopting a holistic or trans-doctrinal approach to understanding how and why patent protection reaches into after-arising technology.

To illustrate the importance of this conclusion in a concrete manner, this Essay offers a novel example of how patent scholarship on the written description requirement may have been led astray by its failure to consider the baseline of protection for after-arising technology provided by patent doctrines other than written description. Written description is commonly described as a doctrine that imposes unusual or aberrational restraints on the scope of patents on biotechnology inventions. This description is inaccurate because it fails to consider the baseline. In fact, written description may impose restrictions on claims in biotechnology to which claims in other technological sectors are already subject under a different patent doctrine. It may compensate for the fact that the Federal Circuit has failed to apply in the biotechnology sector the means-plus-function rules that limit the scope of functionally defined claims in other sectors. Viewed in light of the baseline of protection for after-arising technology permitted by the rules of means-plus-function claims, written description arguably only levels the playing field in biotechnology.

**PROPOSITION ONE: Written description curtails
the reach of claims into after-arising technology.**

The written description doctrine requires an inventor to demonstrate conceptual “possession of the claimed subject matter as of the filing date” in her disclosure, i.e., to prove in her disclosure that she “invented what is claimed” as of the filing date.⁶ The gist of the possession test is that the inventor must disclose knowledge of the structure of the claimed invention and that a functional description of what it does is insufficient (unless there is a known correlation between function and structure).⁷

Although not commonly recognized, all Federal Circuit cases that use the written description doctrine to invalidate claims have achieved a single goal: they have invalidated claims that were deemed to reach too far into after-

⁶ *Ariad Pharms.*, 2010 WL 1007369, at *12.

⁷ *Id.* at *11.

arising technology, i.e., technology that is not invented until after the patent applicant files her application. In some written description cases, the Federal Circuit invalidated claims because the inventor's research at the time of filing was not deemed to have produced sufficient knowledge of the structure of any claimed embodiment, meaning no claim could issue because any valid claim would impermissibly reach into after-arising technology.⁸ In other written description cases, the Federal Circuit invalidated claims because the inventor sought a claim encompassing both embodiments that were possessed at the time of filing as well as (likely) a considerable number of after-arising embodiments that were not.⁹ In both cases, however, the crux of the problem was the same: the written description requirement curtailed the reach of literal claim scope into after-arising technology.

PROPOSITION TWO: The import of the written description requirement cannot be meaningfully examined without first understanding the baseline of protection for after-arising technology.

The written description doctrine is not the only validity doctrine that restricts the reach of literal claim scope into after-arising technology. To understand the value of the written description requirement, it is therefore critical to understand the effect of written description at the margin. We must initially identify the baseline of protection that is available for after-arising technology in the absence of a written description requirement. Only then can we examine how the written description doctrine does or could pull back on that baseline of protection.

In the pre-*Ariad* debate over written description, courts and commentators frequently raised the baseline issue with respect to the enablement doctrine. Like the written description doctrine, the enablement doctrine is a disclosure doctrine that *inter alia* restricts the reach of literal claim scope into after-arising technology. It requires a patent owner in her disclosure to teach the person having ordinary skill in the art at the time of filing how to make and use the claimed invention.¹⁰ The set of embodiments that the disclosure enables at the time of filing, but that the disclosure does not yet demonstrate the inventor conceptually "possessed" at the time of filing, has been a source

⁸ See, e.g., *Regents of the Univ. of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1567 (Fed. Cir. 1997).

⁹ See, e.g., *id.* at 1567–69.

¹⁰ [Johns Hopkins Univ. v. CellPro Inc.](#), 152 F.3d 1342, 1360 (Fed. Cir. 1998).

of considerable controversy.¹¹ This set must be known to understand the impact of the written description requirement in relation to the baseline of protection for after-arising technology, and the inquiry into identifying this set should continue and become more robust after *Ariad*.

However, the discussion about the baseline issue was unproductively narrow before *Ariad*. Enablement is not the only doctrine—other than written description, of course—that establishes the permissible reach of literal claim scope into after-arising technology. The doctrine of claim construction is relevant: the more heavily courts rely on the disclosed embodiments when construing the meaning of claim terms, the less the reach of literal claim scope into after-arising technologies (which, by definition, are not disclosed).¹² So, too, are the rules of means-plus-function claims. The Supreme Court in the first half of the twentieth century invalidated a number of claims that employed functional language at the point of novelty, fearing that such claims would grant inventors too much control over after-arising technology.¹³ Congress responded in 1952 with a statute that sanctions claims that employ functional language but that mandates a *sui generis* form of claim construction. Functional claim language is interpreted to mean the embodiments that perform the function that are disclosed in the specification, as well as the equivalents of those embodiments.¹⁴ Finally, even the strand of the doctrine of patent eligibility that derives from *O'Reilly v. Morse* and that prohibits the patenting of “abstract principles” is an important component of the baseline.¹⁵ The fundamental problem with a

¹¹ *Compare* Lizard Tech, Inc. v. Earth Res. Mapping, Inc. 424 F.3d 1336, 1345 (Fed. Cir. 2006) (noting that enablement and written description challenges “usually rise and fall together”), *with* Univ. of Rochester, Inc. v. G.D. Searle & Co., 358 F.3d 916, 921–22 (Fed. Cir. 2004) (emphasizing situations in which a claim may be enabled but not possessed).

¹² *See* Phillips v. AWH Corp., 415 F.3d 1303, 1311–24 (Fed. Cir. 2005) (*en banc*) (discussing the tension in claim construction between plain meaning and the specification). Judge Rader has drawn attention to the fact that narrow claim constructions and written description rejections can both be used to establish the maximum permissible breadth of a claim. *Ariad Pharms.*, 2010 WL 1007369, at *25–*26 (Rader, J., dissenting) (noting the tension between claim construction and written description); Lizard Tech, Inc. v. Earth Res. Mapping, Inc. 433 F.3d 1373, 1376–78 (Fed. Cir. 2006) (Rader, J. dissenting from the denial of petition for rehearing *en banc*).

¹³ *See, e.g.*, Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946).

¹⁴ 35 U.S.C. § 112, ¶ 1 (2006).

¹⁵ 56 U.S. 62, 112 (1854); *cf. Ariad Pharms.*, 2010 WL 1007369, at *7 n.4 (noting the resemblance of the *O'Reilly* analysis and the written description requirement).

claim to an “abstract idea” as articulated in *O’Reilly* is that it reaches too far into after-arising technology. The baseline issue cannot be addressed simply by identifying the marginal impact of the written description doctrine on fully enabled claims. It must also consider the rules of claim construction, means-plus-function claiming, the prohibition on “abstract principles,” and perhaps yet other doctrines.¹⁶

PROPOSITION THREE: The baseline of protection for after-arising technology is poorly understood.

The baseline of patent protection for after-arising technology within literal claim scope is under-studied and under-conceptualized. There are two reasons for this sorry state of affairs.

First, patent litigation and scholarship are frequently conducted within distinct doctrinal silos. Courts and manuscripts take on disclosure issues (section 112, paragraph 1), functional claiming issues (section 112, paragraph 6), or utility issues (section 101) in isolation, assuming that each doctrine maps onto a distinct normative problem. In some instances, the stars align to make this assumption a reasonable one. For example, the issue of *retrospective* claim scope—i.e., how far back toward prior-art technology a patent claim can reach—can be reasonably addressed in its entirety by only considering the nonobviousness doctrine of section 103.¹⁷ However, the issue of *prospective* claim scope—i.e., how far into after-arising technology a patent claim can reach—cannot be determined by operating within any particular doctrinal silo. As explored above under proposition two, it is influenced by the enablement and written description doctrines, the rules of claim construction, the rules of means-plus-function claiming, and the strand of the doctrine of patent eligibility that prohibits claims to “abstract principles.” Trying to resolve the issue of the permissible reach of literal claim scope into after-arising technology when operating within doctrinal

¹⁶ The utility doctrine, too, can be interpreted as a doctrine that prevents patent claims from reaching too far into after-arising technology. *Brenner v. Manson*, 383 U.S. 519 (1966) (invalidating a claim describing a method of making a compound with no known practical use at the time of filing). However, unlike enablement and written description, the utility doctrine is usually a binary doctrine in that it is either on or off and it does not restrain claim scope. If an inventor describes a single utility for the claimed invention, the claim is valid and may reach into all later-discovered utilities for the claimed invention.

¹⁷ 35 U.S.C. § 103 (2006). The 103 analysis implicitly includes 102 questions, as the prior art for section 103 is defined with reference to certain of the categories enumerated in section 103. *Oddzon Prods., Inc. v. Just Toys, Inc.*, 122 F.3d 1396 (Fed. Cir. 1997).

silos and aspiring to fix one doctrine at a time, as much of patent scholarship has to date attempted to do, is like playing a frantic game of doctrinal whack-a-mole. When the problem is “solved” in one area, it often just pops up in another.

Second, and more fundamentally, there are flaws in the conceptual structure of patent discourse that makes even formulating the appropriate question a difficult endeavor. The very notion that literal claim scope can reach into after-arising technology to begin with—and that the written description doctrine is therefore needed to restrain the reach of literal claim scope into after-arising technology—may seem counterintuitive even to many people who are immersed in patent practice and scholarship. The black-letter law of claim construction requires courts to fix the meanings of claim terms on the date of filing.¹⁸ How can a claim that has been fixed on date X read on technology that is not invented until after date X?¹⁹ Similarly, many formulations of the enablement doctrine require the inventor to teach the person having ordinary skill in the art how to make and use the *full* scope of the claimed invention at the time of filing.²⁰ If a claim must be fully enabled on date X, how can the claim ever encompass a technology that is not invented until after date X?²¹ Finally, even the rhetoric of the doctrine of equivalents has reinforced the conceptual reification of literal claim scope as a fixed set of things or actions. It is widely acknowledged that the doctrine of equivalents allows a patentee’s rights to grow over time and to permit a patentee to control some after-arising technology.²² However, the flexible

¹⁸ See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*).

¹⁹ I have answered this question in Kevin Emerson Collins, *The Reach of Literal Claim Scope into After-Arising Technology: On Thing Construction and the Meaning of Meaning*, 41 CONN. L. REV. 493, 536–53 (2008) (discussing the distinction between denotational and ideational meaning or reference and sense).

²⁰ *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993); see also *Invitrogen Corp. v. Clontech Labs, Inc.*, 429 F.3d 1052, 1070–71 (Fed. Cir. 2005) (noting that “[t]he scope of [patent] claims must be less than or equal to . . . that which is disclosed in the specification plus the scope of what would be known to one of ordinary skill in the art without undue experimentation” at the time of filing) (internal quotations omitted).

²¹ I have addressed this question in Kevin Emerson Collins, *Enabling After-Arising Technology*, 34 J. CORP. L. 1083 (2009). See also *Ariad Pharms. Inc. v. Eli Lilly & Co.*, 560 F.3d 1366 at 1381 (Fed. Cir. 2009) (Linn, J., concurring), *rev’d en banc*, 2010 WL 1007369 (Fed. Cir. March 22, 2010) (noting that the import of the full-scope enablement rule has never been clarified for functionally defined claims).

²² *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 37 (1997).

nature of the doctrine of equivalents has unfortunately resulted in rhetorical blow-back that has depicted literal claim scope fixed and incapable of encompassing after-arising technology.²³ I have argued at length elsewhere that literal claims do and should routinely encompass after-arising technology (while remaining “fixed” for purposes of claim construction and enabled as well), and I have sought to provide coherent conceptual frameworks for explaining how and why this is true.²⁴ Here, suffice it to say that a meaningful conversation about the written description requirement and the baseline must focus on how and when patent claims should encompass after-arising technology. We must not get hung up on the more basic question concerning whether literal claim scope is ever capable of encompassing after-arising technology. Literal claims do routinely encompass after-arising technology, although we sorely need to develop new conceptual frameworks for patent law that acknowledge, rather than suppress, this fact. Only once we recognize that literal claims routinely encompass after-arising technology can the debate over how written description curtails the reach of literal claims into after-arising technology begin.

CONCLUSION: The next step in scholarship on written description should be to develop a better understanding of the baseline.

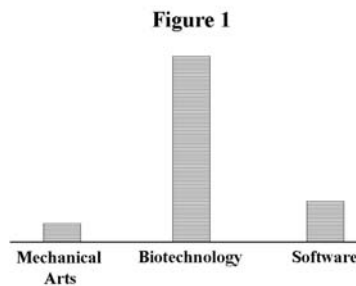
Under Proposition Two, further progress on the issue of written description requires an initial understanding of the baseline of permissible protection for after-arising technology. Proposition Three, however, establishes that this baseline is today poorly understood. To get a grip on the import of the written description doctrine, the first task must therefore be to gain a better understanding of the nature of the patent protection into which the written description requirement is to be slotted. Let’s end the game of statutory whack-a-mole and develop a holistic, trans-doctrinal approach to the analysis of the reach of literal claim scope into after-arising technology. Whether the written description requirement itself should impose a robust or weak restraint on the reach of patent protection into after-arising technology is, in isolation, a meaningless question until we understand how we differ in our assumptions about the baseline.

²³ See, e.g., *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 619 (Fed. Cir. 2000) (Rader, J., concurring in part, dissenting in part) (“Without a doctrine of equivalents, any claim drafted in current technological terms could be easily circumvented after the advent of an advance in technology.”).

²⁴ See *supra* notes 19 & 21.

**AN EXAMPLE OF THE IMPORTANCE OF UNDERSTANDING THE BASELINE:
Written description levels the playing field?**

Consider one example of how a narrow focus on written description apart from other doctrines that restrict the reach of patent protection into after-arising technology has arguably led the conversation about written description astray. A conventional theme in discussions of the written description doctrine is that written description results in a disproportionate restrictive impact on claim scope in the biotechnology sector.²⁵ This assumption is based on the fact that the vast majority of cases in which the Federal Circuit has invalidated claims for lack of a sufficient written description have involved claims to biotechnological inventions. Below is a made-up graph in Figure 1 illustrating the widely perceived impact of the written description doctrine at the Federal Circuit in three different industries:²⁶



Examining the written description cases in isolation as this graph does, it is tempting to assume that the greater number of written description cases in biotechnology cases means that the biotechnology sector has been singled out for aberrational treatment and that written description places an atypical restriction on claim scope in the biotechnology sector. However, if the baseline of protection for after-arising technology provided by other patent-law doctrines is also considered, this assumption is highly questionable. For example, consider the application of another doctrine that restricts the reach of literal claim scope into after-arising technology: the means-plus-function

²⁵ Christopher M. Holman, *Is Lilly Written Description a Paper Tiger?: A Comprehensive Assessment of the Impact of Eli Lilly and Its Progeny in the Courts and PTO*, 17 ALB. L.J. SCI. & TECH. 1, 19 n.89 (2007) (citing discussions of this conventional theme).

²⁶ At this point in time, these graphs are based on intuition rather than hard data. Whether the intuition is reasonably accurate or not, however, the example provides a proof of concept that an examination of the written description doctrine in isolation from the baseline of protection for after-arising technology can be problematic.

rules of claim construction set out in section 112, paragraph 6.²⁷ The Federal Circuit rarely, if ever, uses the rules of means-plus-function claims in the biotechnological arts—despite the blatantly functional nature of the language employed in biotechnology claims. Again, consider a graph in Figure 2 roughly illustrating the restrictive impact of the rules of means-plus-function claims on the reach of literal claim scope into after-arising technology in the same three industries:

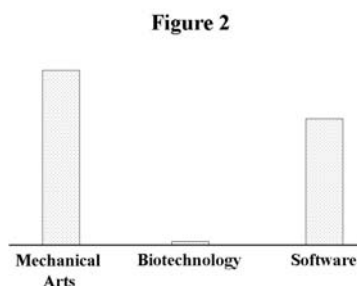
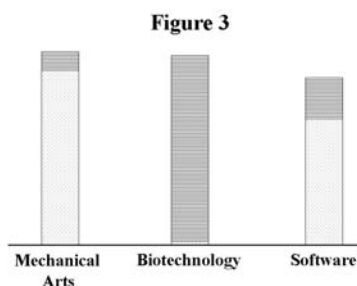


Figure 2 is part of the baseline that establishes the permissible reach of literal claim scope into after-arising technology absent written description. When the impact of the written description doctrine and the baseline are addressed together, the conventional understanding of written description is undermined. Consider Figure 3 which combines the written-description and baseline graphs:



In sum, perhaps the written description doctrine does not impose burdens on one industry that are not borne by other industries. Perhaps it simply levels the playing field because, for one reason or another, the Federal Circuit has selectively failed to bring the (supposedly mandatory) scope-restricting rules of claim construction set out in section 112, paragraph 6 to bear on

²⁷ See *supra* notes 11–12 and accompanying text.

functionally defined biotechnology claims.²⁸ The idea that written description is responsible for leveling the playing field, rather than imposing disproportionate burdens on the biotechnology sector, is a radical challenge to most contemporary scholarship on written description. The important point here is that the challenge can only be formulated after we break out of the distinct doctrinal silos in which much of contemporary patent scholarship is contained and look holistically at the collective effect of all patent doctrines on the reach of literal claim scope into after-arising technology.

The notion that the written description doctrine serves the function in the biotechnology sector that the restrictions imposed by the rules of means-plus-function claiming serve in other sectors is, once recognized, intuitive. In both doctrines, functional claim language that sweepingly encompasses after-arising technology is the bugaboo. Written description opinions are full of references to the problem of “genus claims that use functional language to define the boundaries of a claimed genus.”²⁹ The written description doctrine invalidates functionally defined claims when there is insufficient structure revealed in the patent specification to demonstrate possession of the full scope of the claim.³⁰ Although operating as a doctrine of claim construction rather than as an invalidity doctrine, the rules of means-plus-function claiming achieve exactly the same end as the written description does: they

²⁸ In its strongest form, this level-the-playing-field argument assumes that the Federal Circuit mandates the scope-restrictive claim construction rules of section 112, paragraph 6 for functionally defined claims outside of biotechnology. Stated in the negative, it assumes that the rules of section 112, paragraph 6 are not a purely opt-in regime that patent drafters can choose to either adopt (e.g., by using the words “means for”) or avoid (e.g., by not using the words “means for”). There is support in Federal Circuit case law for the proposition that functional claims that recite insufficient structure are governed by section 112, paragraph 6 regardless of the patent drafter’s intention. *See Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996) (“[M]erely because an element does not include the word ‘means’ does not automatically prevent that element from being construed as a means-plus-function element.”). However, the extent to which the Federal Circuit subjects functional language in claims outside of biotechnology to the rules of section 112, paragraph 6 even when it is clear that the drafter did not intend to invoke those rules is an empirical question beyond the scope of what can be proven here. Also relevant are the norms of claim drafters—how often do claim drafters outside of biotechnology seek purely functional claims without intentionally invoking the rules of means plus function claiming?

²⁹ *Ariad Pharms. Inc. v. Eli Lilly & Co.*, 2010 WL 1007369, at *10 (Fed. Cir. March 22, 2010) (*en banc*).

³⁰ *See supra* notes 6–7 and accompanying text.

limit the permissible reach of literal claim scope into after-arising technology by restricting functionally defined claims to the structure disclosed in the specification.³¹ Written description may simply be a way of filling a gap left by spotty enforcement of the means-plus-function rules that curtail the reach of functionally defined claims into after-arising technology. If true, then it is clearly impossible to understand the written description doctrine without understanding the baseline of protection for after-arising technology provided by other patent doctrines. Enablement is one of the doctrines that establishes the relevant baseline, but clearly not the only one—or perhaps even the most salient one.

³¹ The parallel is also evident in the fact that there are two types of means-plus-function problems that correspond to two types of written description problems. Sometimes, means-plus-function claims are invalid because the specification does not disclose any corresponding structure. *See, e.g., Aristocrat Techs. v. Int'l Game Tech.*, 521 F.3d 1328 (Fed. Cir. 2008). These cases correspond to the written description problems in which the disclosure does not demonstrate possession of any embodiment of the invention. *See supra* note 8 and accompanying text. However, sometimes the rules of means-plus-function claiming simply restrict the scope of a functionally defined claim to the equivalents of the corresponding structures disclosed in the specification. These means-plus-function cases correspond to the written description problems in which broad claims are invalidated but narrow claims are upheld as invented or possessed by the inventor based on the disclosure. *See supra* note 9 and accompanying text.