INFORMATION OVERLOAD AT THE U.S. PATENT AND TRADEMARK OFFICE: REFRAMING THE DUTY OF DISCLOSURE IN PATENT LAW AS A SEARCH AND FILTER PROBLEM

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ABSTRACT

The United States Patent and Trademark Office (USPTO) receives more prior art submissions by patent applicants than its patent examiners have the capacity to process. Although applicant prior art submissions are highly likely to contain references material to prosecution, evidence suggests that overburdened examiners often fail to utilize references submitted by applicants in their examination of patent applications. The information overload suffered by patent examiners has deleterious effects on patent quality, since examiners fail to identify and apply the references most relevant to the examination of patent applications. The vision of patent examiners as perfect filters of patentability and of information as always benefiting the public good is both idealistic and unrealistic. Despite their expertise, patent examiners are human and fallible, vulnerable to the effects of information processing overload and the cognitive biases attendant to decision-making by a boundedly rational actor. Failing to address these problems will likely result in frustrated applicants, overburdened patent examiners, and reduced patent quality. This Article proposes to solve both the plague of inequitable conduct allegations in litigation and the administrative burdens of complying with the duty of disclosure by reframing disclosure obligations for the information age. Reframing the duty of disclosure in this fashion would require no modifications to statutory provisions, few alterations to administrative rules and regulations, and only modest changes to existing case law. Thus, the approach suggested in this Article is both legally conservative and administratively feasible.

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INTRODUCTION

The United States Patent and Trademark Office (USPTO) receives more prior art submissions by patent applicants than its patent examiners have the capacity to process.[1] Although applicant prior art submissions are highly likely to contain references material to prosecution, evidence suggests that overburdened examiners may tend to ignore references submitted by applicants in their examination of patent applications.[2] The information overload suffered by patent examiners may have deleterious effects on patent quality if examiners may fail to identify and apply the references most relevant to the examination of patent applications.[3] Moreover, ignoring applicant-submitted references negates the efforts of patent applicants attempting to comply with the duty of disclosure.

Compliance with the duty of disclosure can be a difficult task. Since the court's inception, the Federal Circuit has significantly reduced the degrees of materiality and intent necessary to prove inequitable conduct, resulting in a dramatic expansion of the duty of disclosure.[4] Predictably, this expansion has resulted in an ever-increasing number of references being submitted by applicants to the USPTO, thereby ensuring the persistence of the overload problem. Moreover, applicants bear a heavy administrative burden without benefitting from a commensurate reduction in risk since, despite these efforts, patentees now face inequitable conduct allegations in 40% of patent cases.[5]

How then to balance the disclosure requirements of the applicants and the information overload suffered by the patent examiners? The purpose of mandatory disclosure is to further the public good by ensuring patent quality. Indeed, the purposes of the USPTO are enshrined in the Constitution itself, "to promote the Progress of Science and the useful Arts."[6] If an invention is to be protected from being copied or used by any other person in order to incentivize innovation, then the public has a right to a well-reasoned determination that the invention deserves that protection. In order to make that determination, the public relies on the USPTO and its cadre of patent examiners, who function as expert gatekeepers charged with the task of ensuring patent quality, and as mediators between

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[1] *See infra* Section I.A.
[2] Christopher A. Cotropia et al., Do Applicant Patent Citations Matter? Implications for the Presumption of Validity 11 (Aug. 10, 2010) (unpublished manuscript, available at http://ssrn.com/abstract=1656568).
[3] *See infra* Subsection I.A.1.
[4] *See infra* Section I.B.
[5] Christian M. Mammen, *Controlling the "Plague": Reforming the Doctrine of Inequitable Conduct*, 24 BERKELEY TECH. L. J. 1329, 1358 (2010).
[6] U.S. CONST. art. I, § 8, cl. 8.

the spirit of inventiveness and the public domain. The logic of the duty of disclosure is to put before the examiner all relevant references in order to facilitate the determination of whether the thing sought to be patented is truly novel, useful, non-obvious, enabled, and clearly described.[7] Thus, information itself benefits the public good by aiding the examiner in his determination of whether an invention is patentable.

This vision of patent examiners as perfect filters of patentability and of information as always benefiting the public good is both idealistic and unrealistic. The conception is idealistic in the sense that it ignores that patent examiners are human and fallible despite their expertise, vulnerable to the effects of information processing overload and the cognitive biases attendant to decision-making by a boundedly rational actor.[8] The conception is unrealistic in the sense that information can only serve the public good through its proper use. Information improperly processed and inadequately filtered may negatively affect the patent examination process and reduce patent quality—opposite its intended effect.[9] Thus, the USPTO's implementation of the duty of disclosure suffers from ideals too far removed from reality, and is an example of an unreasonable regulation with unintended consequences.[10] Failing to address these problems will likely result in frustrated applicants, overburdened patent examiners, and reduced patent quality.

This Article proposes to solve both the plague[11] of inequitable conduct allegations in litigation and the administrative burdens of complying with the duty of disclosure by reframing disclosure obligations for the information age.[12] Rather than viewing applicant-cited references as a burdensome flood of documents that must each be individually considered, the USPTO should develop technological tools for automatically incorporating these references into a primary search pool specific to the patent application under examination.[13] To facilitate this goal, applicants should be encouraged to identify related U.S. and foreign cases to the USPTO and to submit searchable non-patent and foreign patent references when citing prior art.[14] In return, the USPTO should automatically cross-cite references

[7] *See* 35 U.S.C. §§ 102-103, 112 (2006).
[8] *See infra* Subection II.A.1.
[9] *Id.*
[10] *See infra* Subsection II.A.2.
[11] Kingsdown Med. Consultants, Ltd. v. Hollister Inc., 863 F.2d 867, 876 n.15 (Fed. Cir. 1988) (en banc) (quoting Burlington Indus., Inc. v. Dayco Corp., 849 F.2d 1418, 1422 (Fed. Cir. 1988) ("[T]he habit of charging inequitable conduct in almost every major patent case has become an absolute plague.")).
[12] *See infra* Part II.
[13] *See infra* Section II.A.
[14] *Id*.

from related applications by inserting them into the primary search pool, thus eliminating the need for applicants to perform this burdensome task.[15] By searching from among applicant-submitted references and references cited in related applications, the patent examiner should be more able to quickly locate the most relevant information.[16]

Fortunately, reframing the duty of disclosure in this fashion would require no modifications to statutory provisions, few alterations to administrative rules and regulations, and only modest changes to existing case law.[17] To implement the changes, the USPTO would be required to overhaul its information systems for managing references.[18] However, the new systems could be implemented incrementally and would require no technology beyond that included in searching and indexing tools already available from modern information technology companies.[19] The new system could be paid for by increased fees, which applicants would likely be happy to pay in exchange for reduced administrative burdens during prosecution and reduced risk of an inequitable conduct ruling during litigation.[20] Thus, the approach suggested in this Article is both legally conservative and administratively feasible.

Part I discusses the genesis of information overload in the patent system. Because the duty of disclosure has been effectively expanded to encompass a large universe of potentially-material references for each patent application, the USPTO is receiving more references from applicants than it can currently process. Part II proposes to resolve the information overload problem by reframing the duty of disclosure to account for both the explosion of available information and for recent advances in information technology. By improving the procedures and technologies used to receive and manage applicant prior art submissions, the USPTO can turn the deluge of references from applicants into an important tool for ensuring patent quality. Part III describes how other proposals for addressing disclosure problems fail to address the fundamental quandary created by the modern duty of disclosure—how best to sort and filter the often vast universe of potentially-relevant references known to patent applicants.

I. THE GENESIS OF INFORMATION OVERLOAD AT THE USPTO

Evidence suggests that the USPTO may be receiving more information from applicants than patent examiners can

[15] *Id.*
[16] *Id.*
[17] *See infra* Section II.C.
[18] *See infra* Section II.A.
[19] *See infra* Subsection II.C.1.
[20] *Id.*

effectively process using the current information management systems and procedures at their disposal. Rather than working with applicants to develop techniques for improving information flow, the USPTO has sought to impose additional burdens on patent applicants such as restricting the number of references applicants can submit and requiring applicants to characterize references. Section I.A discusses the overwhelming effects of the duty of disclosure on the USPTO, as well as the USPTO's response.

Attempting to restrict submissions of references and failing to use the information that is submitted contravenes the intentions of the Federal Circuit, which has established an expansive duty of disclosure through its inequitable conduct jurisprudence. Section I.B delves into the causes of information overload by briefly reviewing the relevant inequitable conduct jurisprudence from a theoretical standpoint and then analyzing the practical effects of this case law on applicants.

A. The USPTO Overwhelmed

The problem facing the USPTO has morphed from one of receiving insufficient information from applicants to that of sorting and filtering the glut of information that is received.[21] In response to this information overload, the USPTO first attempted to curb the number of prior art references submitted by patent applicants.[22] When that strategy met with heavy resistance, the USPTO abandoned it and has not yet proposed an alternate course of action.[23] The following sections discuss the effects of information overload at the USPTO and the USPTO's response.

1. The Overwhelming Effects of the Duty of Disclosure

i. The Utility of the Duty of Disclosure

A patent provides the patentee with the right to exclude others from making, using, and selling the claimed invention.[24] Because this grant entails a significant concession by the public, the public has a right to require that each patent be properly examined before being granted.[25] A key element of patent examination involves comparing the invention claimed

[21] *See infra* Subsection I.A.1.
[22] *See infra* Subsection I.A.2.
[23] *Id.*
[24] 35 U.S.C. § 271 (2006).
[25] "A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability." Duty of Disclosure, 37 C.F.R. § 1.56(a) (2010).

in the patent application to prior art references that pre-date the claimed invention.[26] If a claim is anticipated by, or obvious in view of, one or more prior art references, then the patent applicant is not entitled to the claim.[27] If an examiner cannot find references sufficient to support a rejection of any claim, the examiner allows the patent to issue with the pending claims.[28]

Accordingly, conducting a thorough examination of a patent application requires identifying the most relevant references. To identify these references, the patent examiner performs a search of the prior art upon commencing examination of a patent.[29] However, prior art searching is often difficult and time-consuming, since prior art references may be poorly indexed, published in obscure locations, unavailable within the search pool typically used by patent examiners, or otherwise hidden in a sea of information.[30] Confronted with the task of examining many patent applications in a limited time frame and with limited resources, as evidenced by the significant backlog of pending applications, [31] the patent examiner may find locating and applying the handful of references most relevant to the examination of the patent application a challenging task.

In contrast to the situation of the examiner who must search for relevant references from within a search pool of all available prior art, the applicant often already possesses a collection of references at least some of which are relatively likely to be material, or relevant, to the examination of the patent. [32] Since providing full and accurate information to

[26] *See, e.g.*, 35 U.S.C. §§ 102-103; 37 C.F.R. § 1.56; UNITED STATES PAT. & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 706.02, 2131, 2141-2145 (8th ed., 8th rev. 2010) [hereinafter MPEP].

[27] 35 U.S.C. §§ 102-103 (2006). The patent applicant may choose to amend the claims to distinguish the cited references. 37 C.F.R. 1.121(c) (2010).

[28] MPEP, *supra* note 26, § 1303(a).

[29] MPEP, *supra* note 26, § 704.01.

[30] The provisions of 35 U.S.C. §§ 102 and 103 are expansive. For example, a reference under 35 U.S.C. § 102(a) is any document demonstrating that "the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent." The universe of printed publications is vast, including references as obscure as a doctoral thesis published and indexed solely in a German university library two months prior to the critical date. *See In re* Hall, 781 F.2d 897 (Fed. Cir. 1986).

[31] At the end of 2009, the USPTO faced a backlog of 735,961 patent applications awaiting examination out of a total of 1,207,794 pending applications. United States Patent and Trademark Office, Performance and Accountability Report Fiscal Year 2009, Table 3: Patent Applications Pending Prior to Allowance, *available at* http://www.uspto.gov/web/offices/com/annual/2009/oai_05_wlt_03.html.

[32] These references may include, for example, documents known to the inventor, discovered during prior art searching, or identified in related domestic or foreign patent applications.

examiners may not always seem be in applicants' best interests, the USPTO imposes on "[e]ach individual associated with the filing and prosecution of a patent application . . . a duty of candor and good faith in dealing with the [Patent] Office."[33] The duty of candor is not merely a negative obligation to abstain from fraud, but also includes an affirmative "duty to disclose to the Office all information known to that individual to be material to patentability."[34]

Both the USPTO[35] and the courts take this applicant responsibility very seriously.[36] An applicant who failed during the prosecution stage to comply with the duty of disclosure to a court's satisfaction faces a finding of inequitable conduct during subsequent litigation of the patent.[37] Inequitable conduct is a defense to allegations of patent infringement that derives from the common law doctrine of unclean hands.[38] If a court finds that the applicant committed inequitable conduct while prosecuting the patent at the USPTO, the court may rule the patent unenforceable.[39] The Federal Circuit has dramatically expanded the effective scope of the duty of disclosure since the court's inception through its inequitable conduct jurisprudence.[40]

Although the expansion of the duty of disclosure makes sedulous compliance with the duty of disclosure difficult for applicants, courts have good reason to encourage applicant submissions of prior art. Recent studies suggest that applicant-submitted references are indeed an important source of information for the USPTO and thus a useful tool for ensuring patent quality. For example, one study found that patents in which at least one non-patent reference is cited have a 20% greater chance of receiving a final rejection.[41] A different study

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[33] Duty of Disclosure, 37 C.F.R. § 1.56 (2010).
[34] *Id.*
[35] United States Patent and Trademark Office, Dep't of Commerce, Media Advisory, 06-41 (July 6, 2010) http://www.uspto.gov/news/pr/2006/06-41.jsp. [hereinafter USPTO Media Advisory] (quoting Jon Dudas, Undersecretary of Commerce for Intellectual Property, as stating: "Clear disclosure upfront by applicants helps examiners more quickly make the correct decision about whether a claimed invention deserves a patent. Clear, forthright disclosure benefits all, because the public—including potential investors—wants to know that a patent application has been thoroughly reviewed, applying the best data available.").
[36] *See infra* Subsection I.B.2.
[37] *Id.*
[38] *See, e.g.*, Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806 (1945).
[39] *Id.*
[40] *Id.*
[41] Dennis D. Crouch, *Evidence Based Prosecution: Non-Patent Prior Art Leads to Rejections*, PATENTLY-O BLOG (Oct. 29, 2006, 10:03 PM), http://www.patentlyo.com/patent/2006/10/evidence_based__3.html. The 20% figure reflects correction for technology (i.e. USPTO-assigned Class). Uncorrected, patents citing at least non-patent reference have a 39% greater

found that 90% of cited non-patent prior art references are provided by the applicant.[42] Thus, unless the non-patent literature provided by patent applicants is significantly less relevant than the non-patent literature located by examiners, examiners should find applicant-cited references useful for formulating rejections.

In addition, applicant prior art submissions often include references cited in related U.S. patent applications.[43] These cross-cited references should include documents such as prior art used to reject claims in the related application and references identified through an examiner search conducted for the related application. Since these references were considered material to the claims of the related application, many of them should be material to the claims of the application into which they are cross-cited.

Finally, applicant prior art submissions often include references cited in related foreign patent applications.[44] These documents can include foreign patents, which are typically outside the scope of prior art searches by U.S. patent examiners,[45] as well as U.S. patents and patent publications identified through searches by foreign patent examiners. Some foreign search authorities, such as the European Patent Office (EPO) and the Korean Intellectual Property Office (KIPO), are recognized by the USPTO as competent International Search Authorities under the Patent Cooperation Treaty.[46] Thus, references cross-cited from related foreign patent application by the patent applicant should provide the USPTO with

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chance of receiving a final rejection and a 9% greater chance of receiving a final rejection.

[42] Bhaven N Sampat, Determinants of Patent Quality: An Empirical Analysis 26 (2006) (unpublished manuscript, available at http://www-siepr.stanford.edu/programs/SST_Seminars/patentquality_new.pdf_1.pdf. The other 10% of cited non-patent prior art references are located by examiners conducting searches.

[43] The Federal Circuit has repeatedly held that the failure to cite such references can support a ruling of inequitable conduct. *See, e.g.*, Larson Mfg. Co. of South Dakota, Inc. v. Aluminart Prods. Ltd., 559. F.3d. 1317, 1340 (Fed. Cir. 2009); McKesson Info. Solutions v. Bridge Med., 487 F.3d 897, 919 (Fed. Cir. 2007); Dayco Prods., Inc. v. Total Containment, Inc., 329 F.3d 1358 (Fed. Cir. 2003).

[44] The extent to which references, office actions, and search reports from related foreign applications are material to prosecution in the United States has never been explicitly addressed by the Federal Circuit. However, language in several Federal Circuit cases coupled with the Federal Circuit's general trend toward an expansive interpretation of the inequitable conduct doctrine means that many applicants and attorneys prefer to cite such references. *See, e.g.*, Michael K. Leachman, *Foreign Office Actions: To Disclose or Not Disclose?*, IP LAW360, Aug. 5, 2009, *available at* http://www.joneswalker.com/news-publications-603.html.

[45] *See* Cotropia et al., *supra* note 2, at 9 (citing John Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 318 (2001)).

[46] MPEP, *supra* note 26, § 1840(III).

valuable information otherwise unlikely to be discovered by the examiner.

ii. The Under-Utilization of Disclosed References

Related applications and inventor knowledge should provide fertile ground for unearthing potentially material references. Applicants face significant pressures to cite potentially material references.[47] Thus, applicants' prior art submissions should be a treasure trove of useful references for patent examiners. Of course, a certain amount of searching and filtering may be required, since applicants have little choice but to liberally cite references.[48]

Despite the usefulness of applicant-cited references, some scholars argue that patent examiners frequently fail to utilize consideration applicant-submitted prior art.[49] A recent study found that applicants submitted 73.5% of cited references.[50] Nevertheless, only 12.7% of the references examiners use to reject claims come from the applicants, while 87.2% come from examiners.[51] More than 33% of examiner-cited references, but only about 2% of applicant-cited references, are used to reject claims.[52] Even controlling for differences such as application type, application year, and reference type, "applicant citations are 35 percentage points less likely to be used in a rejection than examiner citations."[53] Moreover, "the examiner preference for examiner-found rather than applicant-submitted art cannot be explained as a function of the type of art being submitted or the field of technology."[54]

Despite their best efforts, it is not clear that patent examiners are effective at locating the most relevant references within the lengthy applicant submissions of prior art references. If patent examiners were effectively processing each potentially-material reference submitted by patent applicants, then the likelihood of the patent examiner rejecting the pending claims should increase with each additional prior art reference submitted. Indeed, a recent study found that the likelihood of receiving a rejection steadily increases with each additional applicant-cited reference until about twenty references are considered.[55] However, citing more than twenty references does not affect the likelihood of rejection.[56] "After that, there is

[47] *See infra* Section I.B.
[48] *See infra* Section I.B.
[49] Cotropia et al., *supra* note 2, at 11.
[50] *Id*. at 11.
[51] *Id*. at 11-12.
[52] *Id*. at 11-12.
[53] *Id*. at 13-14.
[54] *Id*. at 15.
[55] Crouch, *supra* note 41.
[56] *Id.*

no statistically significant change in final rejections based on a change in the number of cited references."[57] These data may indicate that the ability of examiners to effectively process references plateaus at roughly twenty references.[58] If this is true, then examiners are failing to fully utilize applicant prior art submissions as a resource for more thoroughly examining patent applications.

Due to the significant pressures applicants face to cite potentially-relevant references and the relative absence of any legal drawbacks for citing more references,[59] applicants tend to cite references liberally.[60] Further, there is no reason to believe that references are arranged in order of materiality given the legal risks and administrative difficulties associated with individually evaluating the materiality of each potentially-material reference. Indeed, applicants may reasonably impose an arbitrary ordering (e.g., alphabetical or numerical) on submissions of references in order to avoid giving the appearance of burying highly material references or inadvertently suggesting that a detailed inquiry into materiality has been made. Thus, the plateau that occurs at twenty references is likely a sign of information overload—the quantity of information available for processing exceeds the information processing capacity of the average examiner given the time and budget constraints of patent examination at the USPTO.[61]

Considered together, the studies of examiner usage of applicant-cited references suggest that patent examiners at the USPTO are likely unable to effectively process the large number of references cited by patent applicants. Because applicants wish to avoid the risk of inequitable conduct and yet are unable to effectively determine which references are material, applicant disclosures may often contain references which prove to be cumulative or immaterial alongside the important references. [62] However, applicant citations still

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[57] *Id.*

[58] The data is open to interpretation. The function might be reasonably expected to have a strictly increasing, asymptotic form if examiners were considering each reference with the same level of scrutiny. Assuming the same probability of materiality for each reference, each successive reference citation should yield an increased chance of receiving a final rejection. However, it would be reasonable to assume that each successive reference is more likely than earlier references to be cumulative. Further, the number of applications with claims that are truly allowable over all available prior art should function as an upper bound.

[59] *But see* eSpeed, Inc. v. Brokertec USA, L.L.C., 417 F. Supp. 2d 580, 598 (D. Del. 2006) (chastising the patentee for having buried false statements in a "blizzard of paper").

[60] *See infra* Section I.B.

[61] *See infra* Section II.A.

[62] *See infra* Subsection I.B.2; *see also, e.g.*, USPTO Media Advisory, *supra* note 35.

constitute an important source of material information, including information otherwise unlikely to be discovered by the examiner.[63] This apparent inability of examiners to efficiently and effectively sort through the information submitted by applicants indicates a state of information overload at the USPTO.

2. The USPTO's Response

The USPTO appears to have recognized the information overload problem and has recently tried to alleviate the information processing burden on patent examiners.[64] For example, the USPTO proposed a rules package in 2006 intended to "enable the examiner to focus on the relevant portions of submitted information at the very beginning of the examination process, give higher quality first actions, and minimize wasted steps."[65] However, the proposed rules attempted to change how and what applicants submit rather than change how applicant submissions are processed.[66] For example, a related press advisory stated that the proposed rule change was "designed to encourage early submission of relevant information, and to discourage submission of information that is unimportant or does not add something new for the examiner to consider."[67]

Thus, the proposed rule change would have imposed significant additional burdens on applicants attempting to meet the duty of disclosure. Specifically, the USPTO sought to "require additional disclosure for English language documents over twenty-five pages, for any foreign language documents, or if more than twenty documents are submitted."[68] A related press release stated:

> Were an applicant to submit more than twenty documents, or wait until after the patent examiner's first communication has been sent, the applicant would face increasing requirements to provide more detailed information about the documents and how they relate to the claimed invention. Applicants could be required to point out what part of the document makes it important, to identify

[63] *See supra* notes 41-46 and accompanying text.
[64] Changes to Information Disclosure Statement Requirements and Other Related Matters, 71 Fed. Reg. 38,808 (July 10, 2006) (to be codified at 37 C.F.R. pt. 1); USPTO Media Advisory, *supra* note 35.
[65] Changes to Information Disclosure Statement Requirements and Other Related Matters, 71 Fed. Reg. at 38,808.
[66] *Id.*
[67] USPTO Media Advisory, *supra* note 35.
[68] Changes to Information Disclosure Statement Requirements and Other Related Matters, 71 Fed. Reg. at 38,808.

> specific claims to which a document applies, to clarify how a document adds new information not already considered by the examiner, or explain why the claims are patentable in light of the information provided.[69]

Since patent applicants feel obligated to cite more than twenty references in the majority of patent applications, the proposed rules would have effectively expanded the duty of disclosure to include a duty to characterize each reference submitted to the USPTO. Applicants also would have needed to carefully review each reference in order to meet these heightened disclosure obligations. Expanding the duty of disclosure in this way is excessively burdensome to the applicant.[70]

Moreover, the proposed rules suggest that the USPTO is unaware of the extent of the difficulty of applicants attempting to comply with the duty of disclosure.[71] For example, the press release accompanying the proposed rule change stated:

> The USPTO has observed that applicants sometimes provide information in a way that hinders rather than helps timely, accurate examination. For example, some applicants send a very large number of documents to the examiner, without identifying why they have been submitted, thus tending to obscure the most relevant information. Additionally, some applicants send very long documents without pointing out what part of the document makes it relevant to the claimed invention. Sometimes applicants delay sending key information to the examiner. These practices make it extremely difficult for the patent examiner to find and properly consider the most relevant information in the limited time available for examination of an application.[72]

Missing from the USPTO's statement is an explicit consideration of *why* applicants provide information in a manner that is overwhelming to the examiner.[73] Applicants

[69] USPTO Media Advisory, *supra* note 35.
[70] *See infra* Section III.A.
[71] *See, e.g.*, *infra* Subsection I.B.2.
[72] USPTO Media Advisory, *supra* note 35.
[73] If anything, the USPTO's statements and policy proposals seem to imply a belief that applicants are actively obscuring relevant information. However, there is no reason to believe that applicants know any better than examiners which references in the universe of potentially-relevant references are most material. Instead, applicants are unlikely to make such

submit large numbers of documents to the examiner because the Federal Circuit has significantly expanded the types and sources of references covered by the duty of disclosure.[74] Applicants do not individually describe the content of each of these documents due to both time constraints and a concern that any remarks will be used to allege inequitable conduct[75] or will be treated as an admission regarding the content of these documents. Applicants may send information to the examiner long after the first office action because the examined application is often related to other co-pending U.S. and foreign applications in which references are continuously cited.[76]

Fortunately, the USPTO decided to delay the proposed rules package indefinitely.[77] The proposed rule change was laudable in that the USPTO appeared to recognize the information processing burden experienced by patent examiners. For example, the USPTO believes that patent examiners should not be required "to review documents that do not directly relate to the claimed invention, or that duplicate other information already submitted."[78] Nevertheless, imposing additional burdens on applicants as proposed in the rules change would not further the goal of improving the information processing function of the examiner.[79] Moreover, the USPTO's proposal did not seem to recognize, much less alleviate, the significant administrative burden already incurred by applicants attempting to satisfy the duty of disclosure.[80]

B. The Inequitable Conduct Doctrine's Effects on the Disclosure of Information

Applicant decisions regarding the disclosure of references are guided by the Federal Circuit's inequitable conduct jurisprudence. The inequitable conduct doctrine is a judicially created defense to patent infringement based on the equitable doctrine of unclean hands.[81] As discussed in

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determinations due to the administrative costs and legal risks associated with evaluating the materiality of so many references. *See infra* Section I.B.

[74] *See infra* Subsection I.B.2.

[75] *See infra* Section III.A.

[76] *See infra* Subsection I.B.2.

[77] *See, e.g.*, Dennis D. Crouch, *PTO to Delay IDS & Markush Rules Until 2009*, PATENTLY-O BLOG (Oct. 27, 2008, 3:20 PM), http://www.patentlyo.com/patent/2008/10/pto-to-delay-id.html; *see also* Tafas v. Dudas, 511 F. Supp. 2d 652 (E.D. Va. 2007) (temporarily enjoining the USPTO from implementing its final rules imposing, inter alia, limitations on the filing of continuation applications).

[78] *See* USPTO Media Advisory, *supra* note 35.

[79] *See infra* Section III.A.

[80] *See infra* Subsection I.B.2.

[81] *See* Robert J. Goldman, *Evolution of the Inequitable Conduct Defense in Patent Litigation*, 7 HARV. J.L. & TECH. 37, 49-50 (1993); *see also* S. REP. NO. 110-259, at 59 (2008) (citing Keystone Driller Co. v. Gen. Excavator Co., 290 U.S. 240, 244 (1933)).

Subsection I.B.1, the Federal Circuit's inequitable conduct rulings promote a cautious approach when deciding whether to withhold or cite references to the USPTO.

However, patent applicants cannot afford to carefully apply the nuanced reasoning in the Federal Circuit's many, fact-specific inequitable conduct rulings to each potentially-relevant reference that comes to light in a specific patent application. Applicants operate under stringent time and cost constraints that do not allow for the meticulous analysis of each reference. Moreover, the window of time between a decision made in prosecution and an inequitable conduct analysis performed during subsequent litigation is more than sufficient for the subtleties of the inequitable conduct doctrine to shift. Finally, applicants must act with an abundance of caution since they do not wish to risk the undesirable penalty for inequitable conduct: unenforceability of the patent. Subsection I.B.2 argues that the Federal Circuit's inequitable conduct decisions exert a powerful, yet imperfect effect on applicant behavior.

1. The Mercurial and Unforgiving Inequitable Conduct Doctrine

To establish a prima facie case of inequitable conduct, the defendant must demonstrate that the "applicant, with intent to mislead or deceive the examiner, fail[ed] to disclose material information or submits materially false information to the PTO during prosecution."[82] If the defendant can show that threshold levels of materiality and intent are met, then the court will balance the materiality and intent with the equities of the case to determine whether to render the patent unenforceable.[83] None of these three prongs—materiality, intent, and balancing—tend to work in favor of the patent applicant.

The Federal Circuit currently employs a broad interpretation of the materiality prong of the inequitable conduct inquiry, holding that information is material if a reasonable examiner would deem it relevant to prosecution.[84] This "reasonable examiner" standard tracks the language of Rule 56 prior to 1992, a test discarded by the USPTO because it was imprecise, vague, and insufficiently objective.[85] Thus, the Federal Circuit's current definition of materiality is both

[82] Digital Control Inc. v. Charles Mach. Works, 437 F.3d 1309, 1313 (Fed. Cir. 2006) (citing Norian Corp. v. Stryker Corp., 363 F.3d 1321, 1330-31 (Fed. Cir. 2004)).

[83] Star Scientific, Inc. v. R.J. Reynolds Tobacco Co., 537 F.3d 1357, 1367 (Fed. Cir. 2008).

[84] *See, e.g., id.*; Digital Control Inc. v. Charles Mach. Works, 437 F.3d 1309 (Fed. Cir. 2006).

[85] Mammen, *supra* note 5, at 1335-36 (citing Duty of Disclosure, 56 Fed. Reg. 37,321, 37,322 (Aug. 6, 1991) (codified at 37 C.F.R. § 1.56); Harry F. Manbeck, Jr., *The Evolution and Issue of New Rule 56*, 20 AIPLA Q.J. 136, 139-40 (1992)).

more subjective and far broader than that articulated in the current version of Rule 56.[86] Further, the resurgence of a standard long treated by the Federal Circuit as defunct[87] suggests that even if the Federal Circuit relaxed the standard for materiality, reliance on the alteration might be unwarranted.

As with materiality, the intent prong of the inequitable conduct test should provide little comfort to applicants. Intent to deceive is typically "proven by circumstantial evidence because direct evidence of intent is rarely, if ever, available."[88] Although the precise standard for intent has long been unclear,[89] the Federal Circuit has inferred intent both on the basis of gross negligence[90] and on the ground that the applicant should have known that the uncited documents were material.[91] Indeed, a court can even infer intent to deceive at the summary judgment stage in cases where "there has been a failure to supply highly material information and if the summary judgment record establishes that (1) the applicant knew of the information; (2) the applicant knew or should have known of the materiality of the information; and (3) the applicant has not provided a credible explanation for the withholding."[92] Analyzing intent under a standard of gross negligence or based on whether the applicant "should have known" of a reference's materiality does little to shield applicants from harm since carefully analyzing each of the references cited in large families of patent applications linked by priority relationships is often impractical.[93]

The balancing test, applied once a court determines that the threshold levels of materiality and intent are met, might reasonably be expected to function as a backstop protecting

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[86] *See* Duty of Disclosure, 37 C.F.R. § 1.56 (2010). Material information is that which "establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim," or "refutes, or is inconsistent with, a position the applicant takes in: (i) Opposing an argument of unpatentability relied on by the [o]ffice, or (ii) [a]sserting an argument of patentability." *Id.*

[87] *See, e.g.*, Purdue Pharma L.P. v. Endo Pharms. Inc., 438 F.3d 1123, 1129 (Fed. Cir. 2006); Bruno Indep. Living Aids, Inc. v. Acorn Mobility Servs. Ltd., 394 F.3d 1348, 1352–53 (Fed. Cir. 2005) ("According to the PTO's notice of final rulemaking, the rule change applied to all applications pending or filed after March 16, 1992."); Dayco Prods., Inc. v. Total Containment, Inc., 329 F.3d 1358, 1364 (Fed. Cir. 2003) ("Since the time of the 1992 amendment we have continued to apply the reasonable examiner standard, but only as to cases that were prosecuted under the earlier version of Rule 56.") (emphasis added).

[88] Mammen, *supra* note 5, at 1338.

[89] *See, e.g.*, *id.* at 1336-40.

[90] Brasseler, U.S.A. I, L.P. v. Stryker Sales Corp., 267 F.3d 1370, 1380 (Fed. Cir. 2001).

[91] J.P. Stevens & Co. v. Lex Tex Ltd., 747 F.2d 1553, 1560 (Fed. Cir. 1984).

[92] Ferring B.V. v. Barr Labs., Inc., 437 F.3d 1181, 1191 (Fed. Cir. 2006), *cert. denied*, 549 U.S. 1015 (2006).

[93] Some patents are filed as divisionals, continuations, or continuations-in-part of earlier-filed applications. *See* MPEP, *supra* note 26, § 201.

patentees against excessively technical or overly inclusive applications of the materiality and intent standards. However, applicants would be unwise to rely on courts using equitable discretion to decide against a finding of inequitable conduct, since there are "few reported cases in which a court has found both thresholds were satisfied, but nonetheless exercised its discretion at the balancing stage to refuse to find inequitable conduct."[94] Indeed, the characterization of this equitable prong of the inequitable conduct test as one of balancing is somewhat misleading as the test actually functions as a curve under which only low levels of both materiality and intent provide any real possibility of evading a finding of inequitable conduct.[95]

Because materiality is broadly construed, intent to deceive may be inferred from negligence, and courts rarely find in favor of the patentee during the balancing test, none of the three prongs of the inequitable conduct test provide much protection for good faith patent applicants. Moreover, the constant changes to these three prongs suggest that the application of the doctrine has throughout its history been inconsistent and cyclical. For example, a scholar writing in 1988 cited *A.B. Dick Co. v. Burroughs Corp.* as "a high watermark in assessing blame for 'inequitable conduct,'"[96] presaging current discontent with the doctrine. Finally, many years may pass between a decision made in prosecution of a patent application regarding whether to disclose a reference and judicial review of that decision during litigation, which gives the constant changes to the inequitable conduct doctrine a distinctively *ex post facto* flavor.[97]

Thus, the inequitable conduct doctrine is unlikely in the long run to provide much of a safety net for good faith patent applicants, regardless of how the doctrine is altered.[98] Even

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[94] Mammen, *supra* note 5, at 1344 (citing Rentrop v. Spectranetics Corp., 550 F.3d 1112, 1120 (Fed Cir. 2008); Informatica Corp. v. Bus. Objects Data Integration, Inc. 489 F. Supp. 2d 1060 (N.D. Cal. 2007)).

[95] *Id.* at 1343-44.

[96] *See, e.g.*, John F. Lynch, *An Argument for Eliminating the Defense of Patent Unenforceability Based on Inequitable Conduct*, 16 AIPLA Q.J. 7, 8 (1988) (citing A.B. Dick Co. v. Burroughs Corp., 798 F.2d 1392 (Fed. Cir. 1986)).

[97] The term of each patent "begin[s] on the date on which the patent issues and end[s] 20 years from the date on which the application for the patent was filed in the United States." 35 U.S.C. § 154(a)(2) (2006).

[98] *See, e.g.*, Therasense, Inc. v. Becton, Dickinson & Co., 374 Fed. App'x 35 (Fed. Cir. 2010) (granting en banc review to consider reworking the inequitable conduct doctrine); Exergen Corp. v. Wal-Mart Stores Inc., 575 F.3d 1312, 1331 (Fed. Cir. 2009) (holding that pleadings of inequitable conduct must "sufficient underlying facts from which a court may reasonably infer that a party acted with the requisite state of mind," including the who, what, when, where, why, and how of the material misrepresentation). Litigation-centric approaches for alleviating the risk of inequitable conduct, including the issues on appeal in *Therasense*, are discussed in Section III.A.

without delving deeply into the extensive case law and literature regarding the inequitable conduct doctrine,[99] it seems safe to say that the test for inequitable conduct is generally unforgiving toward patentees. Applicants must be guided by this case law when deciding whether to disclose references, so applicants are justified in aggressively citing references to the USPTO, even if such prophylactic behavior results in information overload for the patent examiner.

2. The Expanded Universe of Potentially Material References

The burden imposed by the duty of disclosure would be modest if it extended only to references known to the inventor or identified by the applicant during prior art searching. However, for most patent applications the Federal Circuit's case law has established a large universe of references of which the applicant will be deemed to have had knowledge and which may later be deemed material to prosecution. In sum, a patentee may be found to have committed inequitable conduct for failing to disclose a reference that was made of record in any of the applicant's U.S. or foreign patent applications related by priority or subject matter.

Applications may be deemed related even if they do not claim substantially similar subject matter.[100] Moreover, merely informing the USPTO of the existence of these related applications and identifying the relationships between them is insufficient to meet the duty of disclosure.[101] Instead, the applicant must carefully track each reference cited in each related application and determine whether the reference should

[99] *See, e.g.*, Christopher A. Cotropia, *Modernizing Patent Law's Inequitable Conduct Doctrine*, 24 BERKELEY TECH. L.J. 72 (2009); Mammen, *supra* note 5; Gina M. Bicknell, *To Disclose or Not to Disclose: Duty of Candor Obligations of the United States and Foreign Patent Offices*, 83 CHI.-KENT L. REV. 425 (2008); Lee Petherbridge, *Positive Examination*, 46 IDEA 173 (2006); Goldman, *supra* note 81; Lynch, *supra* note 96, at 15-17; Kenneth L. Spector, *Remedies for Fraud on the Patent Office*, 41 U. CHI. L. REV. 775 (1974); Cotropia et al., *supra* note 2.

[100] McKesson Info. Solutions, Inc. v. Bridge Med., Inc., 487 F.3d 897, 919 (Fed. Cir. 2007). The court distinguished its decision in Dayco Products, Inc. v. Total Containment, Inc., 329 F.3d 1358, 1367 (Fed. Cir. 2003), which suggested that the duty to disclose rejections from co-pending applications was limited to applications with substantially similar claims. Instead, the court held that "a showing of substantial similarity is sufficient to prove materiality," but such a showing is not necessary to prove materiality. *McKesson*, 487 F.3d at 919.

[101] *See, e.g.*, Larson Mfg. Co. v. Aluminart Products Ltd., 559 F.3d. 1317, 1340 (Fed. Cir. 2009); *McKesson*, 487 F.3d at 919; *Dayco*, 329 F.3d at 1367.

be cross-cited.[102] Cross-citing is required even for applications related by priority and examined by the same examiner.[103]

Potentially material references originating in related cases are not limited to prior art. The Federal Circuit has deemed office actions mailed in a related case to be material, since "knowledge of a potentially different interpretation [of a patent disclosure or reference] is clearly information that an examiner could consider important when examining an application."[104] "Patent disclosures are often very complicated, and different examiners with different technical backgrounds and levels of understanding may often differ when interpreting such documents."[105] The court has also found inequitable conduct for failing to cross-cite a notice of allowance issued in a related case, since such a notice could allow the patent examiner to issue a non-provisional non-statutory double patenting rejection based on the allowed claims in the related case.[106]

Foreign applications are another common source of references that may be deemed material.[107] The applicant of course has a duty to cite material references identified by foreign patent offices and international searching authorities.[108] In *Dayco*, the Federal Circuit ruled that office actions from related U.S. applications may be material.[109] While the Federal Circuit has not yet extended this rule to foreign office actions, many applicants err on the side of disclosure and choose to cite these documents. The Federal Circuit has even found inequitable conduct for an applicant's failure to cite its own statements submitted to a foreign USPTO that could be read to contradict those made in an affidavit submitted in the related U.S. application.[110]

Including all of these types and sources of references within the ambit of the duty of disclosure has created significant administrative burdens for applicants attempting to manage the volume of references that may be material. A large family of related patent applications, each with foreign counterparts, can easily generate hundreds of cited patents and patent publications, non-patent references, office actions, notices of allowance, foreign search reports, and other

[102] *See, e.g.*, *Larson*, 559 F.3d. at 1340; *McKesson*, 487 F.3d at 919; *Dayco*, 329 F.3d at 1367-68.
[103] *See, e.g.*, *McKesson*, 487 F.3d at 919.
[104] *Dayco*, 329 F.3d at 1368.
[105] *Id*.
[106] *McKesson*, 487 F.3d 897.
[107] *See, e.g.*, ATD Corp. v. Lydall Inc., 159 F.3d 534, 548 (Fed. Cir. 1998).
[108] *Id.*
[109] *Dayco*, 329 F.3d 1358.
[110] Therasense, Inc. v. Becton, Dickinson & Co., 593 F.3d 1289 (Fed. Cir. 2010), *review en banc granted*, 374 Fed. App'x 35 (Fed. Cir. 2010).

references.[111] Each reference must be identified and tracked to ensure that it is evaluated for materiality and, if necessary, cross-cited in each related patent application. The patent applicant must also maintain copies of many of these references for submitting to the USPTO. Worth noting is that the administrative burdens and risks of inequitable conduct are often multiplied for valuable applications and complex technologies since these are more likely to spawn numerous related applications.

3. Cost Control and Risk Management

An applicant deciding whether a reference is material must thus consider, among other risks, such disparate issues as whether the document could be used to create a *prima facie* case of anticipation or obviousness, to issue a double patenting rejection, or to contradict any other material reference. Applicants have at their disposal few, if any, bright line rules or safe harbors. For example, the duty of disclosure is not limited to prior art and communication with the USPTO, and can include documents such as notes taken by an inventor at a conference. [112] As another example, the reference may be material even if it could not be used to make a *prima facie* case for invalidity of any of the claims pending in the application.[113]

A broadly defined and highly flexible materiality standard means that each evaluation of materiality is a hopelessly subjective task. Because determinations of materiality for the purposes of inequitable conduct are divorced from examiner's actual cognizance of the reference and its relevance, the standard has more to do with enforcing an overly burdensome regulation and less to do with furthering the public good function of examination. Finally, judicial review of a decision to withhold a reference often develops into a battle of the experts after conducting "liberal discovery," and "[v]ery little of substance is needed to manufacture an inequitable conduct defense" when such procedures are used.[114]

Thus, evaluating materiality for a particular reference may be a risky proposition for a patent applicant since the Federal Circuit's case law has established a large gray area of references that may be, but are not necessarily, relevant. Although this risk may be reasonably born for a few references, such as when the applicant becomes aware of new references after receiving a notice of allowance or paying an issue fee, the

[111] Such families are probably common. For important technologies, patent applicants may choose to file many related applications to pursue claims of differing subject matter and scope.
[112] Monsanto Co. *v.* Bayer Bioscience N.V., 514 F.3d 1229 (Fed. Cir. 2008).
[113] *See, e.g.*, sources cited *supra* notes 80-83 and accompanying text.
[114] Lynch, *supra* note 96, at 15-16.

risk becomes unacceptably high when the number of potentially material references jumps into the hundreds.[115]

Efficiency is another concern. Deciding not to cite a reference saves little, if any, time or expense for the patent applicant since "[r]eading and evaluating a reference is the most attorney intensive, and thus expensive, part of submitting information to the USPTO."[116] Citing a reference has few downsides, since courts have yet to systematically punish applicants for over-citing references.[117] In contrast, any decision not to cite a reference may come back to haunt the applicant during litigation, since the applicant may be required to defend any or all such decisions made during prosecution.[118]

The timing of citations is also an impediment to compliance with the duty of disclosure, which extends until issuance of the patent.[119] An applicant often becomes aware of new references long after examination is initiated, and even after receiving a notice of allowance or after paying the issue fee.[120] In these situations, the applicant must choose either to allow the patent to issue, thus risking a finding of inequitable conduct, or to forgo issuance[121] and pay significant additional fees[122] in order to have the new reference considered.

Patent prosecution is undertaken with the understanding that any particular patent is unlikely to be litigated.[123] Further, the patent process is expensive for applicants due to both

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[115] *See supra* Subsection I.B.2.

[116] Cotropia, *supra* note 99, at 777.

[117] *But see* eSpeed, Inc. v. Brokertec USA, L.L.C., 417 F.Supp.2d 580, 598 (D. Del. 2006) (chastising the patentee for having buried false statements in a "blizzard of paper"). In order to satisfy the intent prong of the test for inequitable conduct under a theory of burying references, a defendant would likely need to prove that the patentee knew that a particular reference was material and buried it in a list of references believed to be significantly less material.

[118] However, reducing the cost of non-compliance is not a surefire way to reduce information overload. "Even if costs of non-compliance are reduced, applicants may still overcomply because it is the least costly type of compliance. Information overload, therefore, continues." Cotropia, *supra* note 99, at 777.

[119] Duty of Disclosure, 37 C.F.R. § 1.56(a) (2010).

[120] For example, the applicant may receive a new office action in a corresponding foreign patent application or related U.S. patent application that cites references that have not been considered in the U.S.

[121] MPEP, *supra* note 26, §§ 706.07(b), 1308(a) (describing the procedures for filing a Request for Continued Examination and for withdrawing an application from issue).

[122] 37 C.F.R. §§ 1.17(e), 1.17(h) (2010) (setting forth the fees required for filing a request for Continued Examination, which is $810 for large entities, and for withdrawing an application from issue, which is $130).

[123] Approximately 1% of patents are litigated. *See* Jean O. Lanjouw & Mark Schankerman, *Characteristics of Patent Litigation: A Window on Competition*, 32 RAND J. ECON. 1, 131 (2000).

USPTO fees and attorney fees.[124] Thus, applicants face significant financial pressure to prosecute applications efficiently and often cannot afford to spend time or money carefully evaluating materiality for hundreds of individual references. When the uncertainty and cost of the materiality inquiry is considered alongside the constantly shifting inequitable conduct doctrine and the sheer number of potentially material references, observers should not be surprised at the decision arrived at by many patent applicants: to cite every potentially material reference.

In addition to being efficient and cautious, implementing a defined policy of citing all references from categories identified by the Federal Circuit as potentially material may provide an applicant with a sort of categorical protection against inequitable conduct allegations. By eliminating as much as possible individual decisions regarding the materiality of references, the applicant can hardly be found to have possessed "intent to deceive" the USPTO.[125]

II. DEFINING INFORMATION OVERLOAD AS A SEARCH AND FILTER PROBLEM

The problems with the duty of disclosure and the inequitable conduct doctrine stem from a conflict between the public's demand for fair prosecution and applicants' needs for valid patents and efficient prosecution in an era of too much information. On the one hand, the duty of disclosure is a fundamentally sensible doctrine grounded in information asymmetries that occur in prosecution, and this duty should take on increasing importance as the amount of available information expands. On the other hand, processing the information produced by the duty of disclosure seems an impossible task. For applicants, even tracking and citing potentially-material references between related cases is an administrative nightmare, and convincingly evaluating materiality for each of these references is impracticable.[126] At the USPTO, patent examiners seem to be overwhelmed with references submitted by applicants, which detracts from the limited time available to them for actively examining patent applications.

Information overload occurs when more information is produced than may be directly processed and used by humans. As discussed in Section II.A, the central task in such a situation changes from producing more information to filtering,

[124] *Oversight Hearing on the United States Patent and Trademark Office: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Prop.*, 110th Cong. 108 (2008) (statement of Alan Kasper, First Vice President of American Intellectual Property Law Association).
[125] *See supra* Subsection I.B.1.
[126] *See supra* Subsection I.B.2.

indexing, and searching the information that has been produced. Section II.B argues that the conflicting concerns inherent in the duty of disclosure may be reconciled by viewing the universe of potentially-material references for each patent application through the context of information overload. Then, the duty of disclosure may be reframed as a search and filter problem, where the goal is to provide the patent examiner with as many potentially-relevant references as possible, as well as the tools to quickly identify the most relevant information. Finally, Section II.C addresses potential hurdles—efficacy, existing law, and administrative and budgetary concerns—to reframing the duty of disclosure in this way.

A. Information Overload and Regulatory Unreasonableness

1. Defining the Problem

The concept of "information overload" has been treated by such various disciplines as organizational science, behavioral economics, consumer research, and information science. As such, there is no universally agreed-to definition for the term "information overload," but the focus here is on the simple, colloquial notion of an individual *having too much information*. Simply put, to have greater informational input than the capacity to process the input. The term has been constructed across various disciplines to mean cognitive overload, communication overload, sensory overload, and information fatigue syndrome.[127] In the context of duty of disclosure requirements and the USPTO, the problem is best framed as one of communication overload by an information processing system.[128]

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[127] *See, e.g.*, Angela Edmunds & Anne Morris, *The Problem of Information Overload in Business Organizations: A Review of the Literature*, 20 INT'L J. OF INFO. MGMT. 17 (2000); Martin J. Eppler & Jeanne Mengis, *The Concept of Information Overload: A Review of the Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines*, 20 INFO. SOC'Y 325 (2004).

[128] *See* Richard L. Meier, *Information Input Overload: Features of Growth in Communications-oriented Institutions*, 13 LIBRI 1 (1963) (describing information overload as a communications problem). Meier is credited with the earliest study of information input overload in the context of libraries, using an academic library setting to examine models of communication flow, workload, and performance outcomes of information service providers. *See also* Richard L. Meier, *Efficiency Criteria for the Operation of Large Libraries*, 31 LIBR. Q. 215 (1961) [hereinafter Meier, *Efficiency Criteria*] (describing an early study of how an information processing—and distributing—system operates: as requests for service at the library increased beyond the capacity of the system to process them, the level of stress on the system increased, and breakdowns in communication and service ensued).

There is extensive literature on organizations as information processing systems.[129] Information processing in organizations is generally defined as the gathering of data, the processing of that data into information, and the communication and storage of information in the organization.[130] Central to the problem of information processing is the problem of "uncertainty." According to Galbraith, "uncertainty is the difference between the amount of information required to perform the task and the amount of information already possessed by the organization."[131] Thus, the amount of uncertainty an organization must confront positively correlates with the amount of information processing ability necessary for the organization to manage that uncertainty.

Effective organizations are those that fit their informational processing capabilities to the amount of uncertainty they must contend with. The logistical view of organizational information processing views organizations as systems that must balance their processing capacities with the processing requirements of their environments.[132] Fit between capacity and environment corresponds with good organizational performance and survival, and misfit with poor performance and failure. Information processing is defined in terms of the capacities of organizational structures and processes to transfer information within an organization, to move the information beyond the boundaries of the

[129] The behavioral science theory of management views organizations as cooperative systems with intensive information processing requirements and a great need for multi-level decision making. *See generally* RICHARD M. CYERT & JAMES G. MARCH, A BEHAVIORAL THEORY OF THE FIRM (1963); JAMES MARCH & HERBERT A. SIMON, ORGANIZATIONS (1958); Armen A. Alchian & Harold Demsetz, *Production, Information Costs, and Economic Organization*, 62 AM. ECON. REV. 777 (1972).

[130] JAY R. GALBRAITH, DESIGNING COMPLEX ORGANIZATIONS (1973); *see also* Michael Tushman & David Nadler, *Information Processing as an Integrating Concept in Organizational Design*, 3 ACAD. MGMT. REV. 613 (1978) (noting that different organization structures have different capacities for processing information and are more effective when there is a better match between the information processing requirements of the task and the information processing capacity of the unit).

[131] Galbraith, *supra* note 130, at 5; *see also* Jay R. Galbraith, *Environmental and Technological Determinates of Organizational Design*, *in* STUDIES IN ORGANIZATIONAL DESIGN (Jay W. Lorsch & Paul R. Lawrence eds., 1970); Jay R. Galbraith, *Organization Design: An Information Processing View*, 4 INTERFACES 28 (1974).

[132] George P. Huber, *Organizational Information Systems: Determinants of Their Performance and Behavior*, 28 MGMT. SCI. 138 (1982) [hereinafter Huber, *Organizational Information Systems*]; *see also* George P. Huber, *A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making*, 15 ACAD. MGMT. REV. 47 (1990).

organization, and to access specific kinds of information in order to transform data or make decisions.[133]

The problem with focusing only on either the individual actor or the organization as the unit of analysis is that both depictions ignore that organizations are made up of individuals, and tend receive and process information much like their human actors. There is a vast amount of literature documenting shortcomings in information processing on the individual, human level: scholars of behavioral economics and psychology have empirically shown that most decision-makers have limited cognitive abilities, imperfect information, deviate from perfect rationality, and are subject to numerous cognitive biases.[134] The processing of the information can be inefficient, redundant, erroneous, or misfocused.

Organizations, like individuals, process information in stages, and exhibit information processing activities similar to those observed at the individual level.[135] The parallel process model of information processing acknowledges the mutuality of organizational-level and individual-level information processing stages and their limits. The parallel process model characterizes organizational level information processing in these stages: attention, encoding, storage/retrieval, choice, and outcomes.[136] These stages mirror and function similarly to those at the individual level, but is the larger context within which individual level information processing occurs.[137] Moreover, the parallel process model reflects the dynamic interaction between the individual and his organization, allowing for the routinized information collection by the collective organization and the specialized information gathering done by its individuals.[138] Complex organizations are only as good as their individual human components, and various studies indicate that individuals are subject to many types of errors in judgment: individuals do not accurately perceive their information processing limits (thus leading to

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[133] Huber, *Organizational Information Systems*, *supra* note 132.

[134] *See* Daniel Kahneman & Amos Tversky, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCI. 1124 (1974). Research in behavioral law and economics focusing on deviations from perfect rationality may also be relevant to this discussion. *See generally* BEHAVIORAL LAW AND ECONOMICS (Cass R. Sunstein ed. 2000); Russell Korobkin, *A Multi-Disciplinary Approach to Legal Scholarship: Economics, Behavioral Economics, and Evolutional Psychology*, 41 JURIMETRICS J. 319 (2001).

[135] Patricia D. Corner et al., *Integrating Organizational and Individual Processing Perspectives on Choice*, 5 ORG. SCI. 4, 294-308 (1994); *see also* Barbara Levitt & James G. March, *Organizational Learning*, 14 ANN. REV. SOC. 319 (1988) (arguing that organizational learning is routine based, history-dependent and target-oriented, and occurs through encoding inferences from experience and history into routines that guide organizational behavior).

[136] Corner et al., supra note 103, at 295.

[137] *Id*.

[138] *Id*.

overload),[139] emphasize the wrong information,[140] or make errors due to over-confidence.[141]

This parallel processing model is of particular applicability to a complex organization such as the USPTO, whose examiners are effectively on the front lines of information processing. While the USPTO may not have to worry about organizational survival, it does have to worry about performance.[142] In order to fulfill its public function as the expert filter, the USPTO must worry about the error-prone judgment of its human examiners, and its own organizational level management of information.

2. Resolving Regulatory Unreasonableness

For the sake of promoting their own organizational objectives, organizations such as the USPTO should match their information processing capabilities to their information loads. Failure to match processing capability to informational input results in decreases in efficiency and effectiveness.[143] One should not define the problem as being one of merely "too much information" or having "bad information," but as one of matching information processing capability with information load. Too great a mismatch would make the information processing system, here the USPTO, suffer too much overload stress, causing it to have breakdowns in its examination process.[144] Here, the problem is that the patent examiners do

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[139] *See* Norman L. Chervany & Gary W. Dickson, *An Experimental Evaluation of Information Overload in a Production Environment*, 20 MGMT. SCI. 1335 (1974). Subject decision makers either summarized data or raw figures. Subjects using the summarized data made higher quality decisions in less time, but had less confidence in their decisions.

[140] *See* C. Michael Troutman & James Shanteau, *Inferences Based on Non-Diagnostic Information*, 19 ORG. BEHAV. & HUM. PERFORMANCE 43 (1977) (finding that judges often allowed irrelevant, non-diagnostic information to influence their decisions).

[141] *See* Terry Connolly, *Information Processing and Decision Making in Organizations*, *in* NEW DIRECTIONS IN ORGANIZATIONAL BEHAVIOR 205 (Barry M. Staw & Gerald R. Salancik eds. 1977) (suggesting that individuals would need to gather more information than strictly necessary to reach some given level of confidence); Stuart Oksamp, *Overconfidence in Case Study Judgments*, 29 J. CONSULTING PSYCH. 261 (1965) (reporting that decision making performance was unaffected by more information, but that additional information increased the decision-maker's confidence).

[142] Organizational survival is defined as the ability of the organizational form to survive and persist. It is distinct from viability, which describes the share of the market of a given organizational form. The population ecology literature in organizational studies is the best source for qualitative and quantitative treatment of this phenomenon. *See* Michael T. Hannan & John Freeman, *The Population Ecology of Organizations*, 82 AM. J. SOC. 929 (1977); John Freeman et al., *The Liability of Newness: Age Dependence in Organizational Death Rates*, 48 AM. SOC. REV. 692 (1983).

[143] Tushman & Nadler, supra note 130.

[144] *See* Meier, *Efficiency Criteria*, *supra* note 128.

not receive information from applicants in a digital, searchable form. Also, patent examiners do not have at their fingertips information such as lists of references used to form rejections in related applications, allowed claims from related applications, and a search pool composed of documents that have a greater likelihood of materiality than documents drawn from the search pool of all available prior art. While the objective of the duty of disclosure is reasonable, the methods of compliance and the treatment of the disclosed information are not. Indeed, the disjunction between the objective of the duty of disclosure and the burdensome information requirements by which compliance is determined is tantamount to "regulatory unreasonableness," defined by Eugene Bardach and Robert Kagan as "the imposition of uniform regulatory requirements in situations where they do not make sense."[145]

In their book, *Going by the Book: The Problem of Regulatory Unreasonableness*, Bardach and Kagan argue the unreasonable application of regulation causes serious and widespread problems: inflexible, legalistic enforcement discourages responsible behavior, threatens the legitimacy of the regulatory agency, and engenders resistance that undermines regulatory objectives. Bardach and Kagan define two kinds of economically inefficient and thus unreasonable regulatory requirements. These are "rule-level unreasonableness," which has to do with aggregate economic inefficiency, and "site-level unreasonableness," which has to do with particular encounters between the enforcers and the regulated. [146] Site-level unreasonableness concerns the "particular costs and aggravations imposed by particular enforcement officials on particular institutions and businesses." [147] Because regulatory compliance can take a significant toll on resources, some sites will have fewer resources available for compliance than others, resulting in variability in compliance and thus a lack of uniformity in rule

[145] EUGENE BARDACH & ROBERT A. KAGAN, GOING BY THE BOOK: THE PROBLEM OF REGULATORY UNREASONABLENESS 58 (Temple Univ. Press, 1982). The authors go on to give a more precise definition: "A regulatory requirement is unreasonable if compliance would not yield the intended benefits . . . . Further, a regulatory requirement is unreasonable if compliance would entail costs that clearly exceed the resulting social benefits . . . . Finally, unreasonableness means cost-ineffectiveness." *Id.* at 6.

[146] *Id.* at 7. For Bardach and Kagan, these are distinguishable phenomena, even if site-level unreasonableness is a logical corollary of the former. Site-level unreasonableness extends to personal experiences with regulation, going far beyond the cost-benefit analysis weighing social benefits against compliance costs that is the core of rule-level unreasonableness. Site-level unreasonableness would extend to the frustrations applicants encounter when making determinations about materiality for the purposes of satisfying the duty of disclosure and avoiding charges of inequitable conduct, and would also extend to the frustrations of the patent examiner attempting to wade through the vast sea of references submitted.

[147] *Id.*

application. Moreover, rules are generally over-inclusive, which leads to difficulties in interpretation and application by both regulators and their regulated subjects. Overly broad rules attempt to compensate for the inability to foresee all possible ramifications of the regulated activity. Further, crises in which rules fail to regulate the activity or are violated create an exigency leading to additional, even broader regulation. These problems of anticipatory over-breadth and reactive lawmaking are exacerbated by the politics of the legislative or administrative rule-making process, leading to the adoption of rules of that go far beyond the common, non-crisis situations actually confronted by their regulated subjects. [148]

Of particular applicability to the problem of the expansive duty of disclosure is what Bardach and Kagan call "the perverse effects of legalism." [149] They argue that the enforcement philosophy that makes compulsory the literal application of over-inclusive rules to all sites irrespective of differences in sites and capacity for compliance makes regulatory unreasonableness a pervasive problem. Overly broad rules may potentially be unreasonable when confronted by such diversity, but the legalistic enforcement magnifies that unreasonableness, resulting in negative, even contradictory results. [150] Moreover, the unreasonableness created by such legalistic enforcement at the site-level engenders resentment and resistance on the part of the regulated, which encourages minimal, formalistic compliance, reducing cooperation while raising the substantial costs of litigation. The challenge for government is not to eschew regulation entirely, as there are social benefits to regulation despite the compliance costs. Rather, the challenge is "the far more complex one of selecting the appropriate regulatory implements more wisely and of developing the competence to regulate more reasonably and responsibly. [151] Bardach and Kagan argue for greater cooperation and exchange between regulators and their subjects, as "the social responsibility of regulators, in the end, must be not simply to impose controls, but to activate and draw upon the conscience and the talents of those they seek to regulate."[152]

This type of site-level unreasonableness and the complex interactions between regulations, regulators, and the regulated is not unfamiliar to other areas of law. The problem of information overload and ensuing poor performance has been documented with respect to securities regulation and

[148] *Id.* at 58-66.
[149] *Id.* at 93-119.
[150] *Id.* For example, one such negative consequence of legalism includes site-level effort diverted from the pursuit of safety or environmental protection to ensure that other obvious but trivial requirements are met.
[151] *Id.* at 301.
[152] *Id.* at 323.

mandatory disclosure requirements, framed as one that affects the lay investor as well as the SEC official with respect to investing choices.[153] Just as with the duty of disclosure, the features of securities law that could tend to address the risk of information overload are too weak to be meaningful. Indeed, with respect to the requirement of materiality to determine whether a misstatement or omission constitutes fraud in securities law, the test is "substantial likelihood that a reasonable investor would consider it important in deciding how to vote,"[154] rather than whether the investor "might" find important.

This view of regulation as information filtering mechanism would benefit the duty of disclosure. Many studies have shown that information overload can be mitigated through better presentation that facilitates the searching, comparison, and processing of information.[155] Charles O'Reilly's 1982 study demonstrated that accessibility of information, rather than quality of information, is most related to the reported frequency of its use in decision-making.[156] This finding has been documented in previous studies, as time-constraints and organizational pressures contribute to a subject preferring a more accessible source of information even if the quality of the information is less than another source of information known by the decision-maker to be in existence.[157] O'Reilly gives

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[153] *See* Troy A. Paredes, *Blinded by the Light: Information Overload and Its Consequences for Securities Regulation*, 81 WASH. U. L.Q. 417 (2003); *see also* Susanna K. Ripken, *The Dangers and Drawbacks of the Disclosure Antidote: Toward a More Substantive Approach to Securities Regulation*, 58 BAYLOR L. REV. 139 (2006).

[154] Paredes, *supra* note 153, at 448 (citing TSC Indus., Inc. v. Northway, Inc., 426 U.S. 438 (1976), in which the Supreme Court expressed concern that a low threshold of materiality would be more harmful than helpful to the investor: "Some information is of such dubious significance that insistence on its disclosure may accomplish more harm than good . . . [M]anagement's fear of exposing itself to substantial liability may cause it simply to bury the shareholders in an avalanche of trivial information—a result that is hardly conducive to informed decisionmaking.").

[155] Charles A. O'Reilly, III, *Individuals and Information Overload in Organizations: Is More Necessarily Better?*, 23 ACAD. MGMT. J. 684 (1980); *see generally* EDWARD R. TUFTE, THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION (1983); David A. Schkade & Don N. Kleinmuntz, *Information Displays and Choice Processes: Differential Effects of Organization, Form, and Sequence*, 57 ORG. BEHAV. & HUM. DECISION PROCESSES 319 (1994); Don N. Kleinmuntz & David A. Schkade, *Information Displays and Decision Processes*, 4 PSYCHOL. SCI. 221 (1993); James R. Bettman et al., *Cognitive Considerations in Designing Effective Labels for Presenting Risk Information*, 5 J. PUB. POL'Y & MARKETING 1 (1986).

[156] Charles A. O'Reilly, III, *Variation in Decision Makers' Use of Information Sources: The Impact of Quality and Accessibility of Information*, 25 ACAD. MGMT. J. 756 (1982).

[157] Charles A. O'Reilly, III, *Supervisors and Peers and Information Sources, Group Supportiveness, and Individual Decision Making Performance*, 62 J. APPLIED PSYCH. 632 (1977).

several explanations for this preference of accessibility over quality: "the structure of the organization may restrict access to quality sources," "organizational incentive systems that have intended or unintended consequences on information search," or the "information in organizations is incomplete or vague."[158] Thus, maintaining accessibility to information is just as important as controlling the amount of information. Moreover, information overload is not necessarily always bad. In previous studies, O'Reilly found lower satisfaction to be positively correlated with an increased tendency by senders to distort information during transmission.[159] Thus, when people do not feel that they have adequate information, they express less confidence in their decision-making, and can then distort the information they do process. The studies suggest "the need, not for less information, but for a more careful dissemination of information available within the organization, with particular attention to information-dependent jobs or units."[160]

To mitigate the frustration and resistance applicants must feel when navigating between the requirements of the duty of disclosure and risk of inequitable conduct, the USPTO should cooperate with applicants to streamline the collection, searching and indexing of references. To do otherwise would perpetuate the information overload problem and exacerbate the unintended consequences of site-level unreasonableness. Again, the problem is not too much information, but the poor management and utilization of that information. The problem with the expansiveness and elasticity of the duty of disclosure is that it lacks the coherence and clear delineations necessary to avoid overbreadth. The challenge for the USPTO, as with the challenge more generally to all regulators, is to balance its role vis-à-vis applicants through cooperation and burden-sharing. The USPTO must strive to match its information processing capabilities with the current tide of references. It must do more to modernize its collecting, searching and indexing capabilities, so that it might meet its "social responsibility" to regulate more reasonably and responsibly in concert with the efforts of applicants.

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[158] O'Reilly, *supra* note 155, at 767; *see also* Michael L. Tushman & Ralph Katz, *External Communication and Project Performance: An Investigation into the Role of Gatekeepers*, 26 MGMT. SCI. 1071 (1980); Michael L. Tushman & Ralph Katz, *Communication Patterns, Project Performance, and Task Characteristics: An Empirical Evaluation and Integration in an R&D Setting*, 23 ORG. BEHAV. & HUM. PERFORMANCE 2, 139 (1979).

[159] Charles A. O'Reilly, III, *The Intentional Distortion of Information in Organizational Communication: A Laboratory and Field Investigation*, 31 HUM. REL. 173 (1978).

[160] O'Reilly, *supra* note 157, at 693.

B. Reframing the Duty of Disclosure for the Information Age

The USPTO must find ways to manage the flood of references that was effectively demanded by the Federal Circuit through its inequitable conduct rulings and is now provided by applicants through extensive Information Disclosure Statement (IDS)[161] submissions. At the same time, the USPTO has a responsibility to issue valid patents, which should include a duty to help applicants acting in good faith to avoid downstream inequitable conduct allegations. The USPTO can meet both of these goals by overhauling its systems for managing and considering references for each patent application, as discussed in Subsection II.B.1. Rather than treating applicant-cited references as a context-free list of documents that must each be separately evaluated for materiality by the patent examiner, the USPTO could incorporate these references into a contextual search pool for the examiner.

Treating applicant-cited references in this fashion would allow the USPTO to streamline the process for citing and submitting references, thus significantly reducing administrative and legal costs for applicants. At the same time, the USPTO would need to require applicants to submit searchable references whenever possible. Subsection II.B.2 discusses how the reference submission process could be changed to facilitate better information management at the USPTO and to ease the burden on applicants.

1. Modernizing the USPTO's Treatment of Cited References

The prototypical patent applicant for whom the duty of disclosure was developed had at her disposal a handful of references that were clearly relevant to a pending patent application. In contrast, the modern patent applicant often has imputed knowledge of many different references, some of which are likely material and many of which are not. Fortunately, information management technology has sufficiently advanced to the point where neither the patent applicant nor the examiner should be required to individually examine each of these references, and the patent system should not operate under the pretense that such an individual examination is or should be occurring. Instead, the duty of disclosure may be reframed as a searching and filtering problem that the USPTO can address by harnessing modern information management technology. With these changes, the duty of disclosure can be realigned with its original purpose—

[161] *See* MPEP, *supra* note 26, § 609.

to improve patent quality and to ensure that patents are fairly granted.

i. Automatically Establishing a Primary Search Pool of References

The USPTO should establish, for each patent application, a "primary search pool" for the use of the patent examiner that is specific to the patent application being examined. The primary search pool should function as a searchable set of all references identified by the patent applicant, the examiner, or the USPTO information systems as potentially material.[162] The primary search pool should act as a first stop for the examiner's prior art searching. Only when the primary search pool fails to yield the material references for which the examiner is searching should the examiner need to search the wider universe of all available prior art references.

The primary search pool should include, at a minimum, any references submitted by the applicant in information disclosure statements. These references are normally drawn from the applicant's own knowledge, from related applications, and from the applicants' prior art searching, all categories of documents in which the Federal Circuit has found at least some references to be material.[163] The mere presence of a reference in an IDS submission suggests that an examiner may wish, and indeed is currently required, [164] to consider whether it is material to the examination of the patent application. By organizing these references into a primary search pool that the examiner can search first, the USPTO could remedy the problem of underutilization of applicant-submitted prior art while reducing unnecessary searching by examiners.[165]

The primary search pool need not be limited to references submitted by the applicant in the application under examination. Rather, the primary search pool could include references identified by the examiner during earlier prior art searches but that were not used to formulate a rejection during a previous office action. Also, the primary search pool could automatically incorporate references cited by applicants or examiners in other patent applications related by priority to the application under examination. After all, a reference that enters the primary search pool in one application may also be relevant

[162] Establishing a primary search pool for each patent application may necessitate minor changes in the way applicants submit, and the USPTO receives, IDS submissions. At a minimum, the patent office should encourage applicants to submit digitized, searchable references whenever possible. The implications of this proposal for the way in which applicants submit references are discussed in greater detail in Subsection II.B.2.

[163] *See supra* Subsection I.B.2.

[164] MPEP, *supra* note 26, § 609.05(b).

[165] *See supra* Subsection I.A.1.ii.

to the examination of related applications. The applicant could even be provided with a mechanism for electronically linking applications related by subject matter, but not by priority, to facilitate the inclusion of an even greater number of relevant references.

ii. Automatically Providing Information Regarding Related Applications

The USPTO's information management systems should automatically provide the patent examiner with useful information regarding related cases. For example, the examiner should be able to easily access a list of references relied upon for novelty, obviousness, and double patenting rejections in other applications either related by priority claim or identified by the applicant as related by subject matter. Currently, the applicant is responsible for identifying references cited in related applications.[166]

In addition, the examiner of a patent application in which a provisional double patenting rejection has been issued should be automatically notified if a notice of allowance is issued in one of the applications on which the provisional double patenting rejection is based. Currently, the USPTO relies on the applicant to identify USPTO communications from related cases,[167] which is inefficient and time consuming for all parties to the process.

Awareness of information from related applications would help examiners quickly locate material references for formulating rejections, since a reference relied upon in a directly related application should have an increased likelihood of relevance in the instant examination. Moreover, the assumption by the USPTO of the responsibility for cross-citing between related applications would eliminate a common cause of inequitable conduct allegations against patent applicants.[168]

Eventually, the USPTO should extend these systems to integrate with participating foreign patent offices. For example, the USPTO could develop information systems for interoperating with the EPO and KIPO since these patent offices are recognized by the USPTO as reliable international search authorities.[169] References used to reject claims in related foreign patent applications could be explicitly identified to the examiner of the corresponding U.S. applications.[170] References cited in foreign search reports and office actions from participating foreign patent offices could be automatically

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[166] *See* sources cited *supra* note 43.
[167] *Id.*
[168] *Id.*
[169] *See supra* note 46 and accompanying text.
[170] In some cases, the applicant may need to provide or pay for a translation. Alternately, machine translation software may be used.

incorporated into the primary search pool, and the USPTO in return could make these references available to foreign patent offices.

iii. Eliminating the Requirement for Examiners to Individually Consider Each Reference

One immediate result of improving access to applicant-submitted references relates to the consideration of these references by patent examiners. Under the USPTO's current procedures, the patent examiner considers each reference properly submitted by the patent applicant.[171] However, with the search and index capabilities proposed herein at their disposal, patent examiners should not be responsible for individually reviewing each reference disclosed by the patent applicant. Indeed, recent studies indicate that examiners are already paying little attention to applicant-submitted references, despite the USPTO guidelines.[172] Not only is the careful review of each reference an onerous task that apparently remains largely unaccomplished, it is also a task that would be entirely unnecessary if examiners had access to better searching and filtering tools.

Eliminating the requirement that the examiner consider each reference cited by applicant has implications for other USPTO procedures. For example, applicant-submitted references are automatically placed on the cover of the patent under the current rules, since the patent examiner is responsible for reviewing each properly submitted reference.[173] Under the proposal articulated in this article, however, examiners would

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[171] "The information contained in information disclosure statements which comply with both the content requirements of 37 C.F.R. § 1.98 and the requirements; based on the time of filing the statement, of 37 C.F.R. § 1.97 will be considered by the examiner. Consideration by the examiner of the information submitted in an IDS means that the examiner will consider the documents in the same manner as other documents in Office search files are considered by the examiner while conducting a search of the prior art in a proper field of search. . . . Examiners must consider all citations submitted in conformance with the rules." MPEP, *supra* note 26, § 609.05(b). This statement seems to suggest that the patent examiner should individually consider each reference as if it appeared in the results of a prior art search. In contrast, the proposal articulated in this article would provide the examiner with the tools to perform a search of the cited references but would not require the examiner to individually consider each reference.

[172] Cotropia et al., *supra* note 2; Crouch, *supra* note 41. These findings are intuitive. If applicants do not have the resources to carefully evaluate the materiality of each reference in relation to a particular claim set, then it is difficult to imagine that examiners have the resources to do so.

[173] "All references which have been cited by the examiner during the prosecution, including those appearing in Board of Patent Appeals and Interferences decisions or listed in the reissue oath, must be listed on either a form PTO-892 or on an Information Disclosure Statement (PTO/SB/08 **) and initialed. All such reference citations will be printed in the patent." MPEP, *supra* note 26, § 1302.02.

not be required to consider each applicant-submitted reference. Accordingly, these references should not be automatically listed on the cover of the issued patent. This change would reflect the realities of modern patent prosecution, where forcing either the applicant or the patent examiner to carefully consider each reference potentially within the ambit of the duty of disclosure is hopelessly inefficient.

Moreover, eliminating the automatic listing on the patent cover of each reference cited by either the applicant or the examiner would also avoid sending false signals to juries and judges in subsequent patent litigation. All issued patents enjoy a presumption of validity.[174] However, "factfinders are far more likely to invalidate a patent on the basis of prior art not before the PTO," since "judges and juries not technically trained are unlikely to second-guess the decision of the expert examiner to allow the patent" over references that the patent examiner already considered. [175] This observation could reasonably spur a comprehensive reevaluation of the presumption of validity and inequitable conduct doctrine.[176] At a minimum, however, the apparent reliance of factfinders on the judgment of the USPTO suggests a more conservative strategy when listing references on the cover of the patent. Specifically, the USPTO should not suggest that the patent examiner has carefully considered references that in fact may have been given no more than a cursory inspection.

iv. Providing a Mechanism for Applicants to Request Individual Consideration of Specific References

If the requirement that examiners individually consider every reference cited by applicants were to be eliminated, an applicant should be able to request that the patent examiner carefully consider a specific, limited subset of the references that are cited. For example, the applicant may be concerned about the validity of the claims when compared to a specific reference and thus seek the USPTO's imprimatur on the patent application with respect to that reference. Nevertheless, the failure to explicitly request that the examiner consider a specific reference should never be held to constitute inequitable conduct. The applicant will have fulfilled his duties by

[174] "A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim." 35 U.S.C. § 282 (2006).

[175] Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 nn.3-4 (2001) (citing John R. Allison & Mark Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185 (1998)).

[176] *See, e.g.*, Cotropia et al., *supra* note 2.

providing the reference to the USPTO, and filtering the cited references to formulate rejections is a task that should be left to the USPTO.

Thus, applicants should be provided with a two-tiered system. At the first level, the applicant can enjoy a safe harbor from inequitable conduct with respect to a group of references by submitting each of the references to the USPTO in an IDS. At the second level, the applicant can also enjoy the effectively heightened presumption of validity that results from reference being listed on the face of the patent by explicitly requesting that the examiner carefully consider a specific, limited subset of the submitted references.

The USPTO could reasonably impose additional limitations or requirements on applicants requesting evaluation of a limited set of references in exchange for providing the examiner's careful consideration. For example, the USPTO could require the applicant to describe why each reference in the special request is material, could impose additional fees for reviewing these references, or could restrict the number of references for which an applicant may request review. These additional requirements could be quite similar to those the USPTO suggested imposing for all applicant-cited references in its recently promulgated rules package.[177]

The USPTO's proposal was intended "to improve the quality and efficiency of the examination process" by "enabl[ing] the examiner to focus in on the relevant portions of submitted information."[178] These are laudable goals, but the USPTO's proposal would have put applicants in a difficult position—facing burdensome requirements for each reference submitted and risking inequitable conduct for each reference withheld. In contrast, the proposal articulated in this article would not impose any such dilemma on applicants, since applicants could, without burdensome requirements, avoid inequitable conduct allegations by informing the USPTO of all potentially material references. Moreover, allowing the examiner to search and filter the cited references rather than consider them individually would meet the USPTO's goals of improving the quality and efficiency of the examination process.

2. Revising the Process for Citing References

i. Current Procedures for Citing References

Some of the most burdensome aspects of complying with the duty of disclosure are tracking and citing references

[177] *See supra* Subsection I.A.2.

[178] Changes to Information Disclosure Statement Requirements and Other Related Matters, 71 Fed. Reg. 38,808 (July 10, 2006) (to be codified at 37 C.F.R. pt. 1).

already on record in related applications.[179] Although the determination of the materiality of a reference is based on the pending claims in the subject application, a reference that is material to the prosecution of one application is often material to the prosecution of related applications. One practical course of action when faced with the multitude of references generated by a group of related applications is to cross-cite all of the references.[180]

However, the applicant faces a significant administrative burden even after making a decision to cross-cite two closely related applications. Regardless of the existence of a relationship between two applications, the applicant must separately identify each reference of record in a first application for the purposes of citing it in a second application. This requirement extends even to USPTO-produced documents such as office actions and notices of allowance.[181] Indeed, this requirement is not relaxed even if the two applications are examined by the same patent examiner.[182]

The applicant must also provide the USPTO with a copy of each reference, with two exceptions. First, applicants need not provide copies of issued U.S. patents or published U.S. patent applications.[183] Second, applicants need not provide copies of references for which copies were previously provided in a parent application.[184] However, the exceptions to the requirement to provide a copy of each reference take no notice of other types of priority relationships through which the USPTO may already posses a copy of a reference.[185]

These requirements are shown in Table 1.

[179] Applications by the same patent applicant may be related to each other in several ways. First, applications may be related by priority, with one application being a continuation, divisional, or continuation-in-part of another application. *See* MPEP, *supra* note 26, §§ 201.06-.08. Second, applications may be related by including a statement establishing the relationship in the specification. Third, applications may be related by subject matter but not explicitly related through priority or reference.

[180] Individually reviewing each reference for materiality could easily require an unrealistic time commitment. The applicant also risks inequitable conduct for every decision not to submit a reference, while submitting the reference carries few costs. *See supra* Subsection I.B.3.

[181] *See supra* Subsection I.B.2.

[182] *See* McKesson Info. Solutions v. Bridge Med., 487 F.3d 897 (Fed. Cir. 2007).

[183] Content of Information Disclosure Statement, 37 C.F.R. § 1.98(a)(2)(ii) (2010).

[184] 37 C.F.R. § 1.98(d) (2010).

[185] *See* 37 C.F.R. § 1.98 (2010).

Table 1

	Cited in Parent Application?	
	Yes	**No**
Published USPTO Documents	• Cite in IDS • *No copy needed*	• Cite in IDS • *No copy needed*
Other References	• Cite in IDS • *No copy needed*	• Cite in IDS • Provide Copy

The duty of disclosure is based, in principle, on information asymmetry between the applicant and the USPTO. However, the requirements for submitting information to the USPTO neglect this core principle. Under the USPTO's current requirements, the applicant must often submit to the USPTO many documents already in the possession of the USPTO. Updating the USPTO's information management systems as discussed in Subsection II.B.1 would obviate the need for this inefficient cross-citing.

ii. Proposed Procedures for Citing References

Several changes could be made to significantly reduce the administrative burdens and legal risks incurred by applicants attempting to comply with the duty of disclosure. First, the USPTO currently distinguishes only between references cited in a parent application and references not previously cited in a parent application. However, the proposed information system would allow the USPTO to automatically cross-cite references from cases such as child and sibling applications related via other types of priority relationship.

Second, the USPTO should provide a mechanism for relating two cases for the purposes of automatic cross-citing even if the two cases are not linked by priority. The applicant may have filed several cases related to similar subject matter and may feel obligated to cross-cite these cases, even in the absence of a priority relationship. The USPTO should not limit automatic cross-citing to cases related by priority.

Third, the USPTO should not require applicants to cite and submit copies of documents generated by the USPTO such as office actions and notices of allowance, contrary to the current rules. Further, the USPTO should store these documents in a searchable text-based format rather than an image-based format. The proposed information system would allow the USPTO to automatically include these documents in the primary search pool for the application under examination. Further, the examiner for the application under examination could be automatically notified of the creation of certain documents in related cases, such as notices of allowance.

Fourth, the USPTO should eventually seek a certain level of electronic integration with key foreign patent offices

such as the EPO. This would mitigate the problem faced by applicants risking charges of inequitable conduct for failing to disclose references cited in related foreign applications.

The proposed regime is shown in Table 2.

Table 2

			Reference Source		
			Related U.S. App.	**Related Foreign App.**[186]	**Applicant**
Reference Type	**Primary U.S. Patent Ref.**		• *Need not cite*	• *Need not cite*	• Cite in IDS • *No copy needed*
	Non-patent Literature	**Secondary U.S. Patent Ref.**	• *Need not cite*	• *Need not cite*	• Cite in IDS • *No copy needed*
		Foreign Patent Ref.	• *Need not cite*	• *Need not cite* • Provide copy upon request	• Cite in IDS • Provide copy
		Non-Patent Ref.	• *Need not cite*	• *Need not cite* • Provide copy upon request	• Cite in IDS • Provide copy

If all of the proposed changes were implemented, the USPTO could assume responsibility for cross-citing references from all related U.S. and foreign applications. Moreover, applicants could be relieved of the burden of providing copies to the USPTO of references already in its possession.

C. Addressing Hurdles to Change

The following sections address administrative, technological, and legal hurdles to modifying the procedures for complying with the duty of disclosure as proposed in Section II.A.

1. Administrative and Technological Feasibility

A complete analysis of the cost of overhauling the USPTO's systems for managing cited references is beyond the scope of this article. Nevertheless, it is possible to make a few qualitative observations regarding cost. From a broad perspective, information management on this scale is within the ambit of government agencies, as demonstrated by the government's efforts to digitize health records.[187] Moreover,

[186] The details of this column will depend on the degree of cooperation that can be established between the USPTO and the relevant foreign patent office.

[187] *See, e.g.*, Peter Orszag, former Director of the United States Office of Management and Budget, Remarks at the Alliance for Health Reform and Robert Wood Johnson Foundation Conference, "Health Information Technology and its Future: More Than the Money" (June 20, 2008),

the USPTO already manages a vast number of electronic documents, and the modifications proposed in this Article could likely be implemented as relatively modest, incremental changes to this pre-existing system.

Furthermore, the cost of providing the technology necessary for implementing these changes could be offset by several financial benefits that would be provided by the proposed system. For example, the USPTO could charge additional fees for carefully considering references at the request of applicants. Since this would be an optional service provided by the USPTO and would provide applicants with an effectively enhanced presumption of validity, applicants would be unlikely to balk at paying additional fees.

More importantly, the cost could be largely offset by charging additional fees to patent applicants. Under the proposed system, much of the administrative burden for tracking and citing references would be handled automatically by USPTO systems, not manually by applicants. Accordingly, the USPTO could charge additional application or IDS fees comparable to the money applicants would save on IDS administration under the new system without any risk that the fees would negatively affect patent filings. Indeed, applicants would likely be willing to pay even more than the cost of IDS administration in exchange for the decreased risk of inequitable conduct down the road.

2. Legal Hurdles

Neither the duty of disclosure nor the inequitable conduct doctrine is governed by statute. Inequitable conduct is a judicially created doctrine derived from the common law doctrine of unclean hands. The duty of disclosure is a part of the duty of candor and good faith in dealing with the USPTO, which is set forth in administrative rules.[188] Thus, none of the changes proposed in this Article would require enacting legislation.

Further, none of the changes proposed would require alterations to the administrative rules. Because applicants would still be required to disclose to the USPTO all references not already submitted in related applications, the administrative rule governing the duty of disclosure would still apply.[189] All of the changes could be made by modifying USPTO procedures set forth in the Manual of Patent Examining Procedure (M.P.E.P.) specifying the procedures for applicants to comply with Rule 56. However, the bar for changing administrative

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available at http://www.allhealth.org/briefingmaterials/Transcript-June20,2008-1256.pdf.

[188] Duty of Disclosure, 37 C.F.R. § 1.56 (2010).

[189] *Id.*

procedures is far lower than those for enacting legislation or changing administrative rules.

The proposals articulated in this Article would also require no major changes to existing case law. In accordance with the edicts of the courts, applicants would still be required to provide the USPTO with all of the references that the USPTO does not already possess. The USPTO would simply assume responsibility for providing to the patent examiner all potentially material references already known to the USPTO.

Changing the procedures for citing references as proposed in this Article may spur certain changes to the case law. However, these procedures do not seem to contravene any established judicial precedent. Instead, the proposed procedures would render many of the Federal Circuit's decisions regarding inequitable conduct inapplicable to patents issued in compliance with the new procedures. For example, case law requiring applicants to cross-cite references between related cases would become inapplicable if the USPTO assumed the burden of providing such references to patent examiners.

III. PATENT QUALITY AND THE LIMITS OF THE LAW

A variety of problems surround the duty of disclosure and the inequitable conduct doctrine. At the litigation stage, the inequitable conduct defense is pled too often and is used to render too many patents unenforceable.[190] From the applicant's perspective, the duty of disclosure represents an onerous administrative burden without a commensurate reduction in risk. [191] From the USPTO's perspective, examiners are overwhelmed with information and thus unable to efficiently and accurately examine applications. The following sections argue that various other proposals either fail to address these problems or unnecessarily favor certain interests over others.

Supplementing the duties owed by applicants seems misguided since applicants already struggle to comply with their existing duties.[192] Providing disincentives for citing many references contravenes the efforts of the Federal Circuit to ensure that more, not fewer, references be brought to the attention of the patent examiner. [193] Eliminating the duty of disclosure is both unwise and unnecessary, since it has a vital role to play in patent quality and since bold action by the USPTO can alleviate the risk of inequitable conduct for patent applicants. [194] Finally, litigation-centric proposals are too remote from prosecution to directly address issues of patent

[190] *See supra* Subsection I.B.1.
[191] *See supra* Subsections I.B.2 and I.B.3.
[192] *See infra* Section III.A.
[193] *See infra* Section III.B.
[194] *See infra* Section III.C.

quality and the interaction between applicants and the USPTO.[195]

Ultimately, the final arbiter of patent quality must be the USPTO. Its regulatory procedures are too nuanced to be directly legislated or altered by litigation. Instead, change must come from within.

A. Expanding the Duty of Disclosure

Proposals to expand the duty of disclosure are often based on the theory that by increasing applicants' responsibilities and improving the quality of information and references provided to examiners, overall patent quality can be improved.[196] Currently, patent applicants often do not search the prior art when filing a patent application due to both the attendant cost and the risk of inequitable conduct. For the same reasons, applicants also avoid characterizing references submitted to the USPTO.[197]

Thus, some commentators suggest imposing on applicants a responsibility to search the prior art and to submit the results of the search the USPTO.[198] Another suggestion is to require applicants to characterize each reference submitted in an IDS so that examiners can quickly identify the most relevant references. Finally, some proposals would impose even more onerous characterization requirements, such as mandating that applicants explain why claims are, or are not, patentable over submitted references.

Imposing on applicants a duty to search the prior art would be inefficient. The USPTO already conducts many prior art searches and should thus benefit from economies of scale.[199] Moreover, regardless of applicant requirements, the USPTO will likely continue to conduct its own searches to ensure that there is some standardization of search quality. Requiring applicants to conduct their own searches of prior art would thus be duplicative and inefficient.

Also, patent examiners may perform searches with a specific type of rejection already in mind, while applicants must make a more general and subjective determination as to materiality for each reference. Such determinations are risky

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[195] *See infra* Section III.D.

[196] *See* Cotropia, *supra* note 98, at 741-43.

[197] *See* FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 12 (2003), *available at* http://www.ftc.gov/os/2003/10/innovationrpt.pdf.

[198] *See* Thomas Schneck, *The Duty to Search*, 87 J. PAT. & TRADEMARK OFF. SOC'Y 689, 704 (2005) (arguing that there should be a duty to search and submit the results to the USPTO).

[199] Economics of scale for the patent office should hold true even if applicants use specialized search firms. Working with search firms still requires that attorneys and searchers collaborate to determine the search terms to use. Often this requires several rounds of refinement.

for applicants[200] and the risks would be multiplied if applicants were required to characterize references. In this case, applicants would be worried not only about the risk of inequitable conduct, but also that an examiner or court could construe any characterization as an admission of the teachings of the characterized references. Thus, applicants would likely err on the side of over-compliance when disclosing references and under-compliance when characterizing references, which would not offer much improvement over the current state of affairs.

When applicants already struggle to comply with their existing duties, imposing additional duties seems illogical.[201] Ultimately, it is the examiner who must determine whether a reference should be used to reject a pending claim. The complex and technical nature of patent applications combined with the inherently subjective nature of evaluating materiality impose limits on the degree to which this determination may be shifted to applicants. With the proper information and information tools at the examiner's disposal, there is no reason to attempt to shift this determination.

B. Providing Disincentives for Excessive Disclosure

Some proposals would discourage applicants from submitting too many references. The logic behind these proposals is that if patent examiners are confronted with hundreds of references, then patent quality will suffer because the examiner will be overloaded with too much information.[202] Indeed, empirical evidence suggests that "citing more than twenty references does nothing to the likelihood of rejection."[203] Thus, citing liberally may not improve patent quality, and could even reduce it if the most important references are buried.

The USPTO responded to the influx of references by proposing a requirement that applicants characterize each reference longer than 25 pages and characterize all references if more than 20 references are submitted.[204] Other proposals include more drastic measures, such as actively prohibiting the disclosure of cumulative and non-material references.[205]

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[200] *See supra* Subsection I.B.3.

[201] *See, e.g.*, Cotropia, *supra* note 99, at 779-82.

[202] Cotropia, *supra* note 99, at 724-75; Beth S. Noveck, *"Peer to Patent": Collective Intelligence, Open Review, and Patent Reform*, 20 HARV. J.L. & TECH. 123, 148-49 (2006).

[203] Crouch, *supra* note 41.

[204] Changes to Information Disclosure Statement Requirements and Other Related Matters, 71 Fed. Reg. 38,808 (July 10, 2006) (to be codified at 37 C.F.R. pt. 1). Requiring applicants to characterize references is both a disincentive for submitting references and an expansion of the duty of disclosure. *See supra* Section III.B.

[205] *See* Bicknell, *supra* note 99, at 468; *see also* Cotropia, *supra* note 99, at 777.

Intentionally submitting immaterial or cumulative information could then result in a court finding inequitable conduct.[206] Even failing to adequately review each reference before citing it could be considered inequitable conduct.[207] Attorneys who fail to comply with these rules would risk fines, sanctions, and even disbarment.[208]

However, the Federal Circuit has clearly indicated that applicants should err on the side of disclosure.[209] Threats to render patents unenforceable or disbar attorneys obeying the court's mandate would be manifestly unfair. Further, proposals to provide disincentives for excessive disclosure rely on the erroneous assumption that a patent attorney is able read each potentially relevant reference and make a legal determination as to its relevance to a specific set of claims. The universe of references for which a patent attorney is deemed to have knowledge now encompasses such disparate documents as U.S. and foreign office actions from related cases, U.S. and foreign patents cited in foreign-issued search reports, and even notices of allowance.[210] Failing to cite even one such document that the Federal Circuit later deems material may lead to unenforceability of the patent, but spending even fifteen minutes reviewing each document in a large group of related cases with a view toward a particular claim set would soon occupy the majority of a patent attorney's time.[211]

Even after carefully reviewing a reference, determining whether the reference is material is a subjective inquiry that has shifted over time due to changes in case law.[212] Identifying cumulative references might be an even more difficult task because the new reference must be compared to each previously-cited reference. Imposing on applicants a duty to identify and omit references that are cumulative or immaterial would layer even more subjectivity, risk of inequitable conduct, and cost atop an already expensive and hazardous endeavor.

Finally, the USPTO's protestations of too much information seem to reflect a misplaced focus. It is not the information itself that is harmful, but rather its processing: the information should be well-organized, properly indexed, and

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[206] Cotropia, *supra* note 99, at 778.
[207] *Id.*
[208] *See* Bicknell, *supra* note 99, at 468.
[209] *See supra* Subsection I.B.1.
[210] *See supra* Subsection I.B.2.
[211] Suppose that a group of cases includes a parent application, one divisional application, and a continuation-in-part application. Also suppose that this family includes a PCT application with foreign filings in Europe, Australia, Japan, and Canada. Each of these eight cases may produce several documents every few months, all of which would need to be carefully weighed for materiality and cumulativeness to each pending U.S. application if submitting cumulative or immaterial references were prohibited.
[212] *See supra* Section I.B.

easily searchable.[213] However, the absence of any significant improvements to the USPTO's information submission, indexing, or searching capabilities suggests that the USPTO has failed to fully harness the obvious improvements in information management technology brought about by the information age. Rather than pushing back against the Federal Circuit's mandate to provide more information to patent examiners and on the patent bar's compliance with this demand, the USPTO should harness this technology to embrace a heightened disclosure standard as a means to provide better information to examiners and to improve patent quality.[214]

C. Abrogating the Duty of Disclosure

Materiality and intent are vague concepts, and attempting to balance the two only muddies the waters further.[215] The inequitable conduct doctrine is thus necessarily subjective, and an inquiry into inequitable conduct allegations often devolves into a battle of the experts after "liberal discovery."[216] Under such a standard, almost every patent will include statements or omissions somewhere in the file wrapper that could be twisted to appear fraudulent or dishonest. Thus, an appropriate watchword for modern patent litigation might be: "Give me six lines written by the most honorable of men, and I will find an excuse in them to hang him."[217]

Thus, one possible solution to the difficulty in crafting an effective inequitable conduct doctrine is to eliminate inequitable conduct as a defense to patent infringement. Such a change need only affect litigated "patent [claims] which are wholly and completely valid," apart from the alleged wrong that occurred during prosecution of the patent.[218] If a patent claim is found obvious or anticipated during litigation, that claim will be invalidated even in the absence of the inequitable conduct doctrine.

Eliminating inequitable conduct as a defense to patent infringement would not necessarily mean eliminating the duty of disclosure. For example, a party might be awarded attorney fees after establishing both invalidity and inequitable conduct.[219] Inequitable conduct might also be used to allege unfair competition or to make an antitrust claim.[220]

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[213] *See supra* Section II.A.
[214] *See supra* Section II.B.
[215] *See supra* Section I.B.
[216] See Lynch, *supra* note 95, at 15-17.
[217] Lynch, *supra* note 96, at 8 (quoting a line from the play "Mirame," by Cardinal Richelieu).
[218] *Id.* at 9.
[219] *Id.*
[220] *Id.*

The U.S. patent system long functioned with a duty of disclosure far less onerous than that imposed on applicants today.[221] According to former Commissioner of Patents David Ladd, the duty of disclosure once extended only to references that the applicant believed may have been anticipatory.[222] Moreover, the intent prong of the inequitable conduct doctrine moved from a standard of recklessness to a standard akin to simple negligence.[223]

The United States is relatively unique in imposing an onerous duty of disclosure. The European Patent Office, for example, long placed no duty to disclose prior art references on patent applicants.[224] Applicants in Japan have a duty to disclose known prior art at the time of filing an application, but failure to disclose cannot be used to render a patent unenforceable in litigation.[225] Australia recently eliminated the limited duty of applicants to disclose foreign search reports to the Australian Patent Office.[226] Following the lead of these foreign patent

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[221] *Id*. at 13-15.

[222] *Id*. at 13 (citing Union Carbide Corp. v. Filtrol Corp., 170 U.S.P.Q. 482, 515 (C.D. Cal. 1971), *aff'd*, 179 U.S.P.Q. 209 (9th Cir. 1973); *see also* Scott Paper Co. v. Fort Howard Paper Co, 432 F.2d 1198, 1205 (7th Cir. 1970), *cert denied*, 401 U.S. 913 (1971) (holding that a failure to cite two prior art references of which the patentee was aware and over which the claims were held invalid was "not a case where the nondisclosed prior art is almost identical to the patentee's invention, and therefore the cases cited by [defendant] are inapposite."); Wen Products, Inc. v. Portable Electric Tools, Inc., 367 F.2d 764, 767 (7th Cir. 1966) (holding that unclear hands is limited to situations in which the prior art "embod[ies] the inventions of the claims in suit."); Admiral Corp. v. Zenith Radio Corp., 296 F.2d 708, 716-17 (10th Cir. 1961) ("If an applicant knows of prior at which plainly describes his claimed invention or comes so close that a reasonable man would say that the invention was not original but had been anticipated, he will not be excused for failure to disclose his knowledge. This case falls outside that rule."); Canaan Products, Inc. v. Edward Don & Co, 273 F. Supp. 492, 501 (N.D. Ill. 1966). *aff'd*, 388 F.2d 540 (7th Cir. 1968) (holding that the obligation to cite references to the patent office is limited to situations in which the patentee knows that the references anticipate the patent claims).

[223] *See* Lynch, *supra* note 96, at 14-15.

[224] Noel J. Akers & David P. Owen, *Skeletons in the Closet: No Duty of Candor in Europe Can Cause Problems in the U.S.*, PATENT STRATEGY & MGMT. (L.J. Newsletters, Phila., Pa.), Jan. 2002, at 1. In a recent rules change, the EPO introduced a limited duty of disclosure. Rule 141 EPC.

[225] Examination Guidelines on Requirement for Disclosure of Information on Prior Art Documents (Provisional Translation) at 2, *available at* http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/pdf/prior_art_doc.pdf. The patent examiner can refuse to issue a patent if he believes that the application fails to satisfy the duty of disclosure. *Id.*

[226] Changes to Regulations Made Under Sections 27(1), 45(3) and 101D of the Patents Act 1990, at 1 (Oct. 18, 2007), a*vailable at* http://www.ipaustralia.gov.au/pdfs/news/ON20071018%20Patents%20Amendments%20Regulations.pdf. However, this legislative change "does not excuse any past failure to comply with the disclosure obligations." *Id*. at 1. According to the Australian Patent Office, "Patent Office experience has been that much of the most relevant material that is filed under the search result disclosure provisions is already available over the internet. It is also

offices—all of which govern functioning patent systems—by eliminating or cabining the duty of disclosure would provide an easy solution to the inequitable conduct quandary.

Nevertheless, significantly reducing the penalties for failing to disclose references would effectively shift the duty to locate these references to the USPTO. Such a reallocation of responsibility would seem markedly inefficient in view of the information asymmetries that often exist between applicants and the USPTO. If an applicant knows of a relevant reference, forcing the USPTO to attempt to independently identify the reference by searching is unnecessarily duplicative. Further, the applicant may be aware of references that are unlikely to be discovered by the patent examiner during the limited time allotted for search. Unearthing information in the form of references benefits the public good by improving the quality of issued patents, and this responsibility should not be ignored when an applicant seeks the exclusionary right that is provided by an issued patent. Further, this duty should not be borne solely by either the applicant or the USPTO, but rather performed in concert to effectuate the purposes of U.S. patent law.

Relaxing the duty of disclosure would thus reduce patent quality, a subject with which the public has recently become concerned.[227] Members of Congress,[228] commentators,[229] and even the USPTO[230] agree that improving

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frequently the case that search and examination results can become available over the Internet *before* the applicant or patentee has informed the Patent Office of their existence." Consultation Paper, Removal of the obligation to lodge search results under subsection 45(3) and section 101D of the Patents Act 1990, at 3 (May 2007), *available at* http://www.ipaustralia.gov.au/pdfs/news/Consultation%20Paper%20-%20s%2045%283%29%20changes.pdf.

[227] Robert C. Pozen, *Inventing a Better Patent System*, N.Y. TIMES, Nov. 16, 2009, at A33 ("The quality of American patents has been deteriorating for years; they are increasingly issued for products and processes that are not truly innovative."); John Markoff, *U.S. Office Joins an Effort to Improve Software Patents*, N.Y. TIMES, Jan. 10, 2006, at C3 ("The patent office has come under increasing pressure in recent years from critics who contend that it issues patents without adequate investigation of earlier inventions.").

[228] *See, e.g.*, Press Release, Statement of Sen. Patrick Leahy, Leahy, Hatch, Conyers, Smith Introduce Bipartisan, Bicameral Patent Reform Legislation (Mar. 3, 2009), *available at* http://leahy.senate.gov/press/press_releases/release/?id=2e870f68-afaf-43e4-9403-d142cfc96ae9 ("[T]here is significant concern that the U.S. Patent and Trademark Office (PTO) is issuing low quality patents."); Press Release, Rep. Howard Berman, Statement on the Patents Depend on Quality Act of 2006 (Apr. 5, 2006), *available at* http://www.house.gov/apps/list/speech/ca28_berman/Patent_Quality.html ("It is . . . clear that the problems with the patent system have been exacerbated by a decrease in patent quality and an increase in litigation abuses.").

[229] *See, e.g.*, R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2136 (2009) ("[T]he need to improve patent

patent quality is an important goal. Moreover, the Federal Circuit has clearly expressed a desire for applicants to disclose more references to the USPTO, and the court deems this policy sufficiently important that it does not hesitate to find intent sufficient to support an inequitable conduct ruling.

Thus, relaxing the duty of disclosure would not only be inefficient, but would also directly contravene the desires of the courts, commentators, the legislature, and the public. Fortunately, reducing the incidence of inequitable conduct allegations and rulings does not require abrogating the duty of disclosure. Instead, the benefits provided by the duty of disclosure can be retained by facilitating cooperation between applicants and the USPTO.

D. Litigation-Focused Proposals

The inequitable conduct pendulum has swept a wide arc over the past 20 years, and commentators have proposed many changes. Litigation-focused proposals to address perceived problems with the inequitable conduct doctrine include suggestions to modify the requisite levels of materiality and intent,[231] clarify or eliminate the balancing step,[232] raise the pleading standard, or adjust the remedies[233] associated with the inequitable conduct doctrine. These attempts to improve the inequitable conduct doctrine are laudable in that many of them would likely improve the precision and fairness of the test for patentees and reduce litigation costs.[234]

Moreover, the Federal Circuit appears to be receptive to such suggestions and is currently reexamining the inequitable conduct doctrine en banc. In *Therasense, Inc. (now Abbott) v.*

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quality is essentially undisputed."); Beth S. Noveck, *"Peer to Patent": Collective Intelligence, Open Review, and Patent Reform*, 20 HARV. J.L. & TECH. 123, 123 (2006). ("There is a crisis of patent quality. Patents are being issued that are vague and overbroad, lack novelty, and fail the constitutional mandate '[t]o promote the Progress of Science and the useful Arts.'"); Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 (2001) ("[T]he PTO should do a more careful job of reviewing patent applications and should weed out more 'bad' patents."); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 321 ("The patent quality crisis is worthy of our attention.").

[230] Steve Lohr, *U.S. Seeking Stricter Rules on Qualifying for a Patent*, N.Y. TIMES, at C3 (June 6, 2007) (quoting Jon Dudas, then director of the USPTO, as stating: "There ought to be a shared responsibility for patent quality among the patent office, the applicants and the public. . . If everything is done right at the front end, we'll have to worry a lot less about litigation later.").

[231] *See, e.g.*, Cotropia, *supra* note 99, at 775-77; Mammen, *supra* note 5, at 1390-94.

[232] *See, e.g.*, Mammen, *supra* note 5, at 1390-94.

[233] *See, e.g.*, Mammen, *supra* note 5, at 1390-94; Cotropia, *supra* note 99, at 774-75; S. 1145, 110th Cong. § 12 (2007).

[234] *See, e.g.*, Cotropia, *supra* note 99, at 782.

Becton, Dickinson & Co., a Federal Circuit panel upheld a district court's ruling rendering Abbott's patent unenforceable due to inequitable conduct.[235] Abbott failed to disclose statements made by Abbott to the European Patent Office during a proceeding involving the European counterpart of another patent family also owned by Abbott.[236] The issues on appeal in Therasense are:

> 1. Should the materiality-intent-balancing framework for inequitable conduct be modified or replaced?
> 2. If so, how? In particular, should the standard be tied directly to fraud or unclean hands? If so, what is the appropriate standard for fraud or unclean hands?
> 3. What is the proper standard for materiality? What role should the United States Patent and Trademark Office's rules play in defining materiality? Should a finding of materiality require that but for the alleged misconduct, one or more claims would not have issued?
> 4. Under what circumstances is it proper to infer intent from materiality?
> 5. Should the balancing inquiry (balancing materiality and intent) be abandoned?
> 6. Whether the standards for materiality and intent in other federal agency contexts or at common law shed light on the appropriate standards to be applied in the patent context.[237]

Without separately addressing the merits of each litigation-centric proposal, a few general comments are in order. Changing the inequitable conduct doctrine may improve certainty and fairness to patentees during litigation, but attempts to fine-tune the duty of disclosure by adjusting the inequitable conduct doctrine are unlikely to succeed. The unreliable history of the inequitable conduct doctrine coupled with the blunt effect of litigation jurisprudence on decisions made in prosecution mean that only a considerable, unambiguous, and longstanding change to the inequitable conduct doctrine is likely to strongly affect applicant disclosure behavior. Such a change would almost certainly result in a significant reduction in the duty of disclosure, which would be unnecessary and would yield deleterious effects on patent quality.

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[235] Therasense, Inc. v. Becton, Dickinson & Co., 565 F. Supp. 2d 1088 (Fed. Cir. 2010).
[236] *Therasense*, 565 F. Supp. 2d 1088.
[237] Therasense, Inc. v. Becton, Dickinson & Co., 374 Fed. App'x 35 (Fed. Cir. 2010) (citations omitted).

Changes to the inequitable conduct doctrine will not alter the fundamental information overload problem facing applicants and the USPTO if the duty of disclosure is maintained in its current form. Applicants simply cannot afford the time or risk of individually evaluating materiality for each reference encountered during the prosecution of a large family of related cases. Nevertheless, the Federal Circuit is correct in its assessment that many of these references may be material to prosecution. Thus, applicants should be encouraged to provide as much information as possible to the USPTO.

How should the USPTO receive references from applicants? How should it organize and use references once they are received? How can the USPTO improve patent quality while reducing the administrative burden and legal risks borne by applicants? These are administrative rather than legal questions. Thus, the information overload experienced by patent examiners and the risks and administrative burdens borne by applicants will not be eliminated by legalistic maneuvering. Instead, the problem must be addressed head-on, at the USPTO.

CONCLUSION

At its core, patent law is information-driven. Accurate patent examination simply cannot be conducted without access to relevant information, and the most relevant information is often abstruse, technical, ambiguous, and inaccessible. Thus, improving the tools available to patent examiners for filtering, searching, and managing this information may turn out to be the single most important means of improving patent quality.

Further, improving the tools and procedures for providing and managing references in the manner proposed in this Article would likely be welcomed by both applicants and examiners due to the decreased need for conducting repetitive, administrative tasks. Examiners would not need to individually consider lists of references of marginal materiality, and patent applicants would not need to manually cross-cite hundreds of references between related patent applications.

The patent system would not be giving up much by eliminating the assumption that either applicants or examiners are carefully considering each reference submitted to the USPTO. In exchange for making this admission, judges and juries would not be misled into according more weight than may be due to the listing of references on the cover of the patent.

Regardless of whether the USPTO decides to adopt the specific proposals made in this article, reframing the duty of disclosure as a search and filter problem is an important step toward managing applicant-submitted references and resolving the problems with inequitable conduct. Acknowledging

information overload as a phenomenon confronting the USPTO should, at very least, inform future thinking on both the inequitable conduct doctrine and the USPTO's procedures for receiving and using references disclosed by applicants.