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Consistent with its unique development, The New York University Journal of Intellectual Property & Entertainment Law (JIPEL) is a nonpartisan periodical specializing in the analysis of timely and cutting-edge topics in the world of intellectual property and entertainment law. As NYU's first and only online journal, JIPEL also provides an opportunity for discourse through comments from all of its readers. There are no subscriptions, or subscription fees; in keeping with the open-access and free discourse goals of the students responsible for JIPEL's existence, the content is available for free to anyone interested in intellectual property and entertainment law.

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NEW YORK UNIVERSITY

JOURNAL OF INTELLECTUAL PROPERTY & ENTERTAINMENT LAW

VOL. 7 BOARD OF EDITORS – ACADEMIC YEAR 2017-2018

PREFACE

Our spring issue demonstrates the incredible reach and influence of intellectual property and innovation law.

The issue opens with Timothy Hsieh's thought-provoking piece on *Matal v. Tam*, the Supreme Court's recent decision striking down the disparagement clause. In his compelling review of the decision, Mr. Hsieh questions the efficacy of the Court's injecting First Amendment rights into United States trademark protection.

Next, Thibault Schrepel presents a new "enhanced no economic sense test" for application to non-price strategies. He highlights the failings of current antitrust doctrine in the United States and Europe as applied to high tech markets. He makes a compelling case for his proposed standard by applying it to major predatory innovation cases.

Continuing the innovation theme, Ryan Jin presents a persuasive argument for patent protection in the era of big data and machine learning. He analyzes the available routes for protecting machine learning inventions through intellectual property and trade secret law, and argues that the current patent system should protect computational inventions.

Finally, Gia Wakil's note provides a thoughtful discussion of the truth in advertising dilemma that surfaces in false advertising law. She advocates for the adoption of the Fourth Circuit's holding in *Brown v. GNC Corporation*, which addressed whether an advertisement can be literally false absent a consensus in the scientific community.

The issue concludes with a summary of this year's Symposium. We were honored to host Judge Pierre Leval of the United States Court of Appeals for the Second Circuit for a riveting discussion on the development of the fair use doctrine in copyright law.

I hope that you find this issue instructive and engaging. On behalf of the 2017-2018 *JIPEL* editorial board, thank you for reading.

Sincerely,
Caroline Herald
Editor-in-Chief
NYU Journal of Intellectual Property & Entertainment Law

NEW YORK UNIVERSITY

JOURNAL OF INTELLECTUAL PROPERTY AND ENTERTAINMENT LAW

VOLUME 7 SPRING 2018 NUMBER 2

THE HYBRID TRADEMARK AND FREE SPEECH RIGHT FORGED FROM *MATAL V. TAM*

TIMOTHY T. HSIEH*

This article provides an analysis of the potential ramifications of the 2017 U.S. Supreme Court case, Matal v. Tam, which has forged a hybrid trademark and free speech right. In permitting trademarks to be allowed over the Disparagement Clause, First Amendment rights are now inextricably intertwined with the scope of trademark protection. This paper examines the holding of the Matal v. Tam case and predicts how the case will influence the behavior of trademark filings and the development of trademark law.

* Visiting Scholar & Senior Researcher, University of California Berkeley School of Law. LL.M., University of California Berkeley School of Law, 2017. J.D., University of California, Hastings College of the Law, 2007. I would like to thank Professor Sonia Katyal, Professor John Haskell, Simon Tam, Tina Loza, and Jennifer Lantz for their contributions to this article.

INTRODUCTION

Before the U.S. Supreme Court case of *Matal v. Tam*, trademarks could not be registered if they "disparage[d] or [brought]…into contemp[t] or disrepute" any "persons, living or dead."[1] The U.S. Supreme Court concluded in *Tam* that the "Disparagement Clause" violated the Free Speech Clause of the First Amendment and also offended "a bedrock First Amendment principle: Speech may not be banned on the ground that it expresses ideas that offend."[2] This legal development has integrated the First Amendment Free Speech right with the traditional rights that a registered trademark possesses. In other words, a new hybrid form of trademark intellectual property has been forged by the U.S. Supreme Court case of *Matal v. Tam*, a form that combines trademark rights with the Free Speech rights under the First Amendment and no longer restricts the registration of a trademark on any content-based justifications. That is, a trademark can now be registered on any content that the trademark owner desires.

This may seem on the surface to improve the vigor of a competitive trademark market place by removing government restrictions and allowing participants to engage in the free-flowing exchange of ideas, but there are concerns that this new hybrid form of trademark will be abused. The United States Patent

[1] 15 U.S.C. § 1052(a) (2006). Also cited as § 1052(a), § 2(a) or "Section 2(a)".
[2] Matal v. Tam, No. 15-1293, slip op. at 1-2 (U.S. June 19, 2017).

and Trademark Office ("USPTO") may start granting registrations to a barrage of offensive racial slurs, sexist terms or other profanities designed to insult individuals on the basis of their ethnicity, gender, sexual orientation, age, and other aspects of their identity.

One immediate cause of concern is the "Washington Redskins" trademark and the corresponding litigation over the trademark in federal courts.[3] Because the Disparagement Clause has been struck down, the Washington Redskins now have the right to pursue registration of their mark, which Native American tribes argue is disparaging. In the aftermath of the *Matal v. Tam* decision, can organizations (like the Washington Redskins) or individuals now register such offensive marks? Will the USPTO be flooded by such "disparaging" trademark applications as a result? This paper proposes that such an outcome is unlikely, or that concern is simply blown out of proportion. Sound marketing practices and goodwill advise against or mitigate that outcome.[4] Common business sense would also suggest that such offensive marks would not be successful in the marketplace.

On the other hand, Free Speech in trademarks gives certain artists or organizations, like "The Slants" or "Dykes on Bikes", the ability to express themselves fully without censorship. Such organizations show that some trademark holders wish to register a mark to "self-disparage" a class that he or she belongs to for an artistic, political or other expression-based purpose. This paper argues that any concern of this new hybrid Free Speech trademark right is outweighed by the right of expression by groups who should be able to exercise the First Amendment in an intellectual property or trademark context.

In addition, this paper argues that this new hybrid form of trademark and Free Speech right is now in sync with parallel fields of intellectual property which do not usually recognize "content-based" limitations, such as Copyright Law (being able to copyright anything, even if it is offensive) and Patent Law (the hardly invoked provision preventing the patenting of inventions used for atomic weapons).[5] The comparison to roughly equivalent doctrines in these related fields

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[3] *See* Pro-Football, Inc. v. Harjo, 415 F.3d 44 (D.C. Cir. 2005); Blackhorse v. Pro-Football, Inc., 111 U.S.P.Q.2d 1080 (T.T.A.B. 2014) (Trademark Trial and Appeal Board ("TTAB") case involving the Washington Redskins trademark).

[4] *See* Bill Donahue, *Post-Slants, Is USPTO Going To Be Flooded With Bad Words?*, LAW360 (June 22, 2017, 5:30 PM), https://www.law360.com/articles/937110 ("In the wake of the U.S. Supreme Court's Slants ruling striking down the government's ban on offensive trademark registrations, some have worried about a flood of ugly language at the trademark office, but experts say those concerns could be overblown.").

[5] 42 U.S.C. § 2181 (2012) ("No patent shall hereafter be granted for any invention or

of intellectual property is to suggest that the effect of removing content-based restrictions (e.g. in the arena of Copyright Law) or attempting to enforce outdated content-based limitations (e.g. in Patent Law) has minimal effect, if any, on the robustness of the underlying intellectual property right. In fact, this paper contends that removing restrictions and infusing trademark rights with Free Speech rights can only lead to benefits.

Part II of this Article will survey the cases leading up to and cited by the *Matal v. Tam* case and analyze relevant law. Part III of this Article will aver that broader business concerns will likely suppress the filing and registration of offensive marks, leaving only exceptional cases, marks having years of built-up history and tradition, such as the Washington Redskins. Part III of this article will additionally argue that the interest of groups in "self-disparaging" for expression-based reason outweighs any concern that the filing and registration of disparaging trademarks will get out of hand. Part IV of this Article compares the new hybrid Free Speech and Trademark right with other approximate equivalents in Copyright Law and Patent Law to argue that the trademark right will not suffer any detriment in being merged with Free Speech rights and may in fact see positive benefits. Finally, Part V of this Article provides a summary of the arguments and points made throughout.

I
THE *MATAL V. TAM* U.S. SUPREME COURT CASE

Simon Tam is the lead singer of a band named "The Slants,"[6] which specializes in a brand of music influenced by other 80s pop-synth bands such as Depeche Mode, Joy Division, The Cure, and New Order termed "Chinatown Dance Rock."[7]

In an interview with The New York Times, Tam explains how he decided to name the band "The Slants":

> My first real lesson on the power of language was at the age of 11. On the basketball courts at school in San Diego, I was tormented by other students. They'd throw balls, punches, rocks and insults, while yelling "gook" and "Jap." One day, I had enough. I threw back,

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discovery which is useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon.").

[6] In re Tam, 808 F.3d 1321, 1331 (Fed. Cir. 2015).

[7] *See* Wikipedia, *The Slants*, https://en.wikipedia.org/wiki/The_Slants (last visited Mar. 17, 2018).

> "I'm a chink, get it right." Stunned, they didn't know what to do. Confused, they stopped.
>
> The act of claiming an identity can be transformational. It can provide healing and empowerment. It can weld solidarity within a community. And, perhaps most important, it can diminish the power of an oppressor, a dominant group.
>
> The idea of reappropriation isn't new. The process of turning negative words, symbols or ideas into positive parts of our own identity can involve repurposing a racial epithet or taking on a stereotype for sociopolitical empowerment. But reappropriation can be confusing. Sometimes people can't figure out the nuances of why something is or isn't offensive — government bureaucrats in particular.[8]

Tam goes on to state that The Slants "toured the country, promoting social justice, playing anime conventions, raising money for charities and fighting stereotypes about Asian-Americans by playing bold music. Never once, after performing hundreds of shows across the continent, did [they] receive a single complaint from an Asian-American. In fact, [the band's] name ['The Slants'] became a catalyst for meaningful discussions with non-Asians about racial stereotypes."[9]

A. The Rejection by the USPTO and the TTAB Appeal

Acting on their attorney's recommendation to register "The Slants" as a trademark, Tam filed a trademark application for the mark because that was "something that's commonly done for national acts" and "a critical step in a music career, not only to protect fans from inadvertently purchasing tickets to another band with a similar name but also because most major record labels and licensing agencies won't work with acts that can't register their names."[10]

When Tam sought registration of "THE SLANTS" on the principal register, the Examining Attorney at the USPTO rejected the registration, applying the two-part framework for disparagement under the Disparagement Clause and the

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[8] Simon Tam, *The Slants on the Power of Repurposing a Slur*, N.Y. TIMES (June 22, 2017), https://www.nytimes.com/2017/06/23/opinion/the-power-of-repurposing-a-slur.html.

[9] *Id.* Tam goes on to later state: "We had called ourselves the Slants as a way of seizing control of a racial slur, turning it on its head and draining its venom. It was also a respectful nod to Asian-American activists who had been using the epithet for decades."

[10] *Id.*

Trademark Manual of Examining Procedure ("TMEP"). The Examining Attorney found that there was "a substantial composite of persons who find the term in the applied-for mark offensive."[11] The Disparagement Clause is a provision of the Lanham Act at 15 U.S.C. § 1052(a) that prohibits the registration of a trademark "which may disparage . . . persons, living or dead, institutions, beliefs, or national symbols, or bring them into contempt, or disrepute."[12]

The two-part framework in determining whether a mark is disparaging first considers "the likely meaning of the matter in question, taking into account not only dictionary definitions, but also the relationship of the matter to the other elements in the mark, the nature of the goods or services, and the manner in which the mark is used in the marketplace in connection with the goods or services."[13] "If that meaning is found to refer to identifiable persons, institutions, beliefs or national symbols," the examining attorney moves to the second step, which asks "whether that meaning may be disparaging to a substantial composite of the referenced group."[14] After these two steps, if the examining attorney finds that a "substantial composite, although not necessarily a majority, of the referenced group would find the proposed mark…to be disparaging in the context of contemporary attitudes," a *prima facie* case of disparagement is made out, and the burden shifts to the trademark applicant to prove that the mark is not disparaging.[15]

In Tam's rejection, the examining attorney relied in part on the fact that "numerous dictionaries define 'slants' or 'slant-eyes' as a derogatory or offensive term"[16] and according to Simon Tam, the examiner also "used sources like UrbanDictionary.com, a photo of Miley Cyrus pulling her eyes back in a mocking gesture and anonymous posts on internet message boards to 'prove' that [the mark] was offensive."[17]

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[11] Matal v. Tam, No. 15-1293, slip op. at 7 (U.S. June 19, 2017).

[12] *Id.* at 5-6 (quoting 15 U.S.C. § 1052(a) (2006)).

[13] *Id.* at 6 (citing TMEP § 1203.03(b)(i)).

[14] *Id.*

[15] *Id.* The USPTO has also specified in the TMEP that "[t]he fact that an applicant may be a member of that group or has good intentions underlying its use of a term does not obviate the fact that a substantial composite of the referenced group would find the term objectionable." *Id.*

[16] *Id.* at 7. The "examining attorney also relied on a finding that 'the band's name has been found offensive numerous times' – citing a performance that was canceled because of the band's moniker and the fact that 'several bloggers and commenters to articles on the band have indicated that they find the term and the applied-for mark offensive." *Id.*

[17] Tam, *supra* note 8.

Tam then contested the USPTO examining attorney's denial of registration before the Trademark Trial and Appeal Board ("TTAB"), but was not successful.[18] Thereafter, Tam appealed the TTAB's decision to the Federal Circuit.

B. The Federal Circuit In re Tam Case

The U.S. Court of Appeals for the Federal Circuit took up Tam's appeal from the TTAB. According to Tam, for the past seven years, he has "supplied thousands of pages of evidence, including letters of support from prominent community leaders and organizations, independent national surveys that showed that over 90 percent of Asian-Americans supported our use of the name and an expert report from a co-editor at the New American Oxford Dictionary."[19] In response, the USPTO called Tam's effort "laudable, but not influential" and further stated in a 2011 decision that "[i]t is uncontested that applicant is a founding member" of a band "composed of members of Asian descent," and afterwards pointed to Asian imagery on The Slant's official website, "including photographs of Asian people and an album cover with a 'stylized dragon.'"[20] According to Tam, "it was as if because we were Asian, because we were celebrating Asian-American culture, we could not trademark the name the Slants. Yet 'slant' is an everyday term—one that has been registered as a trademark many times, primarily by white people."[21]

The Federal Circuit, sitting *en banc*, rendered a majority opinion authored by Judge Moore ruling that the Disparagement Clause was facially unconstitutional under the First Amendment because the Disparagement Clause engaged in viewpoint based discrimination, regulated the expressive component of trademarks and consequently could not be treated as commercial speech—and that the Disparagement Clause was subject to and could not satisfy strict scrutiny.[22] The Federal Circuit also rejected the USPTO's argument that registered trademarks constituted government speech, as well as the USPTO's assertion that federal registration was a form of government subsidy.[23] Furthermore, the Federal Circuit held that even if the Disparagement Clause were to be analyzed under the "intermediate scrutiny" standard applied to commercial speech, it would still fail.[24]

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[18] *Tam*, slip op. at 7.
[19] Tam, *supra* note 8.
[20] *Id.*
[21] *Id.*
[22] In re Tam, 808 F.3d 1321, 1334-39 (Fed. Cir. 2015).
[23] *Id.* at 1339-55.
[24] *Id.* at 1355-57.

In a concurring opinion, Judge O'Malley agreed with Judge Moore's majority opinion but also added that the Disparagement Clause was unconstitutionally vague.[25] Judge Dyk's opinion concurred in part and dissented in part, opining that trademark registration was a government subsidy and that the Disparagement Clause was facially constitutional, but unconstitutional as applied to "THE SLANTS" mark because it constituted "core expression" and was not adopted for the purpose of disparaging Asian Americans.[26] Judge Lourie delivered a dissenting opinion where he agreed with Judge Dyk that the Disparagement Clause was facially constitutional but concluded for a variety of reasons that it was also constitutional as applied to the "THE SLANTS" mark in this case.[27] Finally, Judge Reyna also posited a dissenting opinion, contending that trademarks are commercial speech and that the Disparagement Clause survives the intermediate scrutiny test for commercial speech because it "directly advances the government's substantial interest in the orderly flow of commerce."[28] In the aftermath of the Federal Circuit's *en banc* decision of *In re Tam*, the USPTO filed a petition for certiorari with the U.S. Supreme Court.

C. The Supreme Court's Majority Opinion in Matal v. Tam

The U.S. Supreme Court granted the USPTO's petition for certiorari to ultimately decide whether the Disparagement Clause "is facially invalid under the Free Speech Clause of the First Amendment."[29]

In Justice Alito's majority opinion, before reaching the question of whether the Disparagement Clause violated the First Amendment, the Court considered Tam's argument that the Disparagement Clause did not cover marks that disparage racial or ethnic groups, an argument that was not raised before the TTAB or the Federal Circuit.[30] The Court held that Tam's argument about the definition of "persons" (that racial and ethnic groups were neither natural nor "juristic" persons) was meritless; by the plain terms of the Disparagement Clause, a mark that disparages a "substantial" percentage of the members of a racial or ethnic group necessarily disparages many "persons," namely, members of that group. Moreover, the Disparagement Clause also applied not to just "persons" but also to "institutions and "beliefs"—implying that it extends to members of any group who share particular "beliefs" such as political, ideological and religious groups,

[25] *Id.* at 1358 (O'Malley, J., concurring).
[26] *Id.* at 1363-74 (Dyk, J., concurring in part, dissenting in part).
[27] *Id.* at 1376-82 (Lourie, J., dissenting).
[28] *Id.* at 1376 (Reyna, J., dissenting).
[29] Matal v. Tam, No. 15-1293, slip op. at 8 (June 19, 2017).
[30] *Id.* at 8-9.

"institutions" and "juristic" persons such as corporations, unions, and other unincorporated associations. Thus, the Disparagement Clause was not limited to marks that disparage a particular natural person.[31]

The Court also found unpersuasive Tam's arguments that his interpretation of the Disparagement Clause was supported by its legislative history and by the USPTO's willingness for many years to register marks that were offensive to African-Americans and Native Americans because: (i) the statutory language of the Disparagement Clause is unambiguous thereby precluding any analysis of the legislative history, (ii) even if the legislative history were to be examined, Tam did not bring to the Court's attention any evidence in the legislative history showing that Congress meant to adopt his interpretation, and (iii) the registration of offensive marks Tam cited is "likely attributable not to the acceptance of his interpretation of the clause but to other factors—most likely the regrettable attitudes and sensibilities of the time in question."[32]

1. Government Speech/Subsidy/Program Analysis

Turning to the main question of whether the Disparagement Clause violates the First Amendment, the Court analyzed three arguments advanced by the USPTO: (1) trademarks are government speech, not private speech, (2) trademarks are a form of government subsidy, and (3) the constitutionality of the Disparagement Clause should be tested under a new "government-program" doctrine.[33]

i. Trademarks are Not Government Speech

Justice Alito recited the rule that the Free Speech Clause does not require the government to maintain viewpoint neutrality when its officers and employees speak about a course of action a government entity embarks on, where it necessarily takes a particular viewpoint and rejects others.[34] One simple example was when the Federal Government produced and distributed posters during the Second World War to promote the war effort (e.g., by urging enlistment, the purchasing of war bonds and the conservation of scarce resources) and expressed a viewpoint; "the First Amendment did not demand that the Government balance the

[31] *Id.* at 9-10.
[32] *Id.* at 11-12.
[33] *Id.* at 12.
[34] *Id.* at 13.

message of the posters by producing and distributing posters encouraging Americans to refrain from engaging in these activities."[35]

Justice Alito mentioned that the government-speech doctrine is susceptible to "dangerous misuse" because if "private speech could be passed off as government speech by simply affixing a government seal of approval, [the] government could silence or muffle the expression of disfavored viewpoints."[36] Furthermore, the Court noted that even though trademarks are registered by the USPTO, an arm of the Federal Government, the Federal Government does not "dream up these marks" and "it does not edit marks submitted for registration;" further, other than the Disparagement Clause, "an examiner may not reject a mark based on a viewpoint that it appears to express."[37] As a result, "an examiner does not inquire about whether any viewpoint conveyed by a mark is consistent with Government policy or whether any such viewpoint is consistent with that expressed by other marks already on the principal register." If a mark meets the Lanham Act's other viewpoint-neutral requirements, then registration is mandatory. If an examiner finds that a mark is eligible for placement on the principal register, that decision is not reviewed by any higher official unless the registration is challenged. Also, "once a mark is registered, the USPTO is not authorized to remove it from the register unless a party moves for cancellation, the registration expires, or the Federal Trade Commission initiates proceedings based on certain grounds."[38]

With all of this in mind, Justice Alito concluded that it is "far-fetched to suggest that the content of a registered mark is government speech" because if the federal registration of a trademark makes the mark government speech, the Federal Government is "babbling prodigiously and incoherently," "saying many unseemly things," "expressing contradictory views," "unashamedly endorsing a vast array of commercial products and services," and "providing Delphic advice to the consuming public."[39] The Court then gives several examples of conflicting and variegated registered marks to ask what the Government has in mind when it advises Americans to "make.believe" (Sony), "Think different" (Apple), "Just do

[35] *Id.*
[36] *Id.* at 13-14.
[37] *Id.* at 14.
[38] *Id.* (citing 15 U.S.C. §§1052(a), 1058(a), 1059, 1062(a), 1064, 1071; 37 CFR §§2.111(b), 2.160, 41.31(a) (2016)).
[39] *Id.* at 14-15.

it" (Nike), "Have it your way" (Burger King), or was the Government warning about a coming disaster when it registered the mark "EndTime Ministries"?[40]

The Court went on to state that the USPTO "has made it clear that registration does not constitute approval of a mark," "it is unlikely that more than a tiny fraction of the public has any idea what federal registration of a trademark means," and "[n]one of [the Court's] prior government speech cases even remotely supports the idea that registered trademarks are government speech."[41]

The Court discussed and distinguished the case on which the USPTO relies on most heavily, *Walker v. Texas Division, Sons of Confederate Veterans, Inc.*, which the Court declares as likely marking "the outer bounds of the government-speech doctrine."[42] In *Walker,* the Court held that messages on Texas specialty license plates bearing the confederate flag were government speech by applying the three factors from the *Summum* case: (1) whether the medium historically communicated the message of the state, (2) whether the public closely associates the message with the State, and (3) whether the government maintains direct control over the message.[43] First, license plates have long been used by the States to convey state messages; second, license plates "are often closely identified in the public mind" with the State, since they are manufactured and owned by the State, generally designed by the State and serve as a form of "government ID"; and third, Texas "maintain[ed] direct control over the messages conveyed on its specialty plates."[44] The Court then held that none of the above mentioned factors were present in the current case pertaining to trademark registration, that federal trademark registration is "vastly different" from the government speech found it previous U.S. Supreme Court cases. The Court opined that if the registration of a trademark converted the mark into government speech, this "would constitute a huge and dangerous extension of the government-speech doctrine" for "if the

[40] *Id.* at 15 (citing make.believe, Registration No. 4,4342,903; Think Different, Registration No. 2,707,257; Just Do It, Registration No. 1,875,307; Have It Your Way, Registration No. 0,961,016; and EndTime Ministries, Registration No. 4,746,225).

[41] *Id.* at 15-17 (discussing and distinguishing the government speech in *Johanns v. Livestock Mktg. Ass'n*, 544 U.S. 550, 560-61 (2005) (holding that government ads promoting the sale of beef products were government speech) and *Pleasant Grove City v. Summum*, 555 U.S. 460, 464 (2009) (holding that monuments in a city park represented government speech due to many factors) from trademarks).

[42] *Id.* at 17 (citing Walker v. Tex. Div., Sons of Confederate Veterans, Inc., 576 U.S. __ (2015)).

[43] *Id.* at 17. *See* CONG. RESEARCH SERV., *Legal Sidebar, License Plates and Public Signs: Government First Amendment Speech* (2015), *available at* https://fas.org/sgp/crs/misc/license.pdf (summarizing the three factors from *Summum*, 555 U.S. 464-65).

[44] *Tam*, slip op. at 17.

registration of trademarks constituted government speech, other systems of government registration could easily be characterized in the same way."[45]

As will be discussed later on in the paper, the Court addressed the concern of extending the USPTO's application of government speech to copyrights. The Court responded to this concern by stating that trademarks often also have expressive content, and companies spend huge amounts to create and publicize trademarks that convey a message. "It is true that the necessary brevity of trademarks limits what they can say. But powerful messages can sometimes be conveyed in just a few words."[46]

Thus, the Court concluded that trademarks are private, not government speech.[47]

ii. Trademarks Are Not Government Subsidies

The Court addressed the USPTO's argument that trademarks are government subsidized speech by stating that all the cases that the USPTO relies on involved cash subsidies or the equivalent.[48] The Court stated that the federal registration of a trademark is nothing like the programs at issue in those cases because the USPTO "does not pay money to parties seeking registration of a mark"; to the contrary, applicants must pay the USPTO a filing fee of $225-$600 and Tam himself paid the USPTO a fee of $275 to register "THE SLANTS."[49] Indeed, the Federal Circuit has stated that those fees have fully supported the trademark registration system for the past 27 years.[50]

In response to the USPTO's argument that trademark "registration provides valuable non-monetary benefits that 'are directly traceable to the resources devoted by the federal government to examining, publishing, and issuing certificates of registration for those marks,'" the Court stated that "just about every government service requires the expenditure of government funds" such as police and fire protection, the adjudication of private lawsuits and the use of public parks and

[45] *Id.* at 17-18.
[46] *Id.* at 18.
[47] *Id.*
[48] *Id.* at 18-19 (citing Rust v. Sullivan, 500 U.S. 173 (1991); Nat'l Endowment for the Arts v. Finley, 524 U.S. 569 (1998); U.S. v. Am. Library Ass'n, 539 U.S. 194 (2003); Regan v. Taxation with Representation of Washington, 461 U.S. 540 (1983); Cammarano v. U.S., 358 US. 498 (1959)).
[49] *Id.* at 19 (citing 37 C.F.R. §2.6(a)(1) (2016) and 15 U.S.C. §1059(a) (2012)).
[50] In re Tam, 808 F.3d 1321, 1353 (Fed. Cir. 2015).

highways.[51] The Court also mentioned that trademark registration is not the only government registration scheme—there are also federal patents and copyrights. State governments also register titles to real property and security interests in addition to issuing driver's licenses, motor vehicle registrations, and hunting, fishing and boating licenses and permits.[52] Thus, the Court declined to interpret federal trademark registration as a government subsidy because the case law cited by the USPTO (as well as the universe of case law involving government subsidies) was not instructive.

iii. Trademarks are Not Government Programs

Finally, in response to the USPTO's argument that the disparagement clause would apply to "government program" cases—a merger of government speech cases and government subsidy cases with "[t]he only new element . . . of two cases involving a public employee's collection of union dues from its employees," the Court stated that trademark registration was far removed from that area because "those cases occupy a special area of First Amendment case law."[53]

The Court further mentioned a potentially more analogous line of cases in which a unit of government creates a limited public forum for private speech.[54] When the government creates such a forum, in either a literal or "metaphysical"

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[51] *Tam*, slip op. at 19-20.

[52] *Id.* at 20.

[53] *Id.* The government program cases are: Davenport v. Washington Educ. Ass'n, 551 U.S. 177, 184-90 (2007) (holding a law constitutional that did not allow an employer to collect a portion of union dues that would be used in election activities, because the law imposed a "modest limitation" on an "extraordinary benefit," e.g. taking money from the wages of non-union members and turning it over to the union free of charge; refusing to confer a greater benefit did not upset the market-place of ideas and did not abridge the union's free speech rights); Ysura v. Pocatello Educ. Ass'n, 555 U.S. 353, 355 (2009) (holding constitutional an Idaho law that allowed public employees to elect to have union dues deducted from their wages but did not allow such a deduction for money remitted to the union's political action committee because "The First Amendment…does not confer an affirmative right to use government payroll mechanisms for the purpose of obtaining funds for expression. Idaho's law does not restrict political speech, but rather declines to promote that speech by allowing public employee checkoffs for political activities."); Abood v. Detroit Bd. of Educ., 431 U.S. 209, 224-26 (1977) (more similar to a government cash subsidy case, where the laws conferred a benefit because it was thought that this arrangement served important government interests).

[54] *Tam*, slip op. at 20. *See e.g.* Good News Club v. Milford Central Sch., 533 U.S. 98, 106-107 (2001); Rosenberger v. Rector & Visitors of Univ of Va., 515 U.S. 819, 831 (1995); Lamb's Chapel v. Center Moriches Union Free Sch. Dist., 508 U.S. 384, 392-93 (1993); Legal Services Corp. v. Velazquez, 531 U.S. 533, 541-44 (2001).

sense, some content and speaker based restrictions may be permitted.[55] In such cases however, "viewpoint discrimination" is forbidden.[56] Extending the viewpoint discrimination test, where the word "viewpoint" is applied broadly, the Court concluded that the Disparagement Clause discriminates on the basis of "viewpoint" because it "evenhandedly prohibits disparagement of all groups," it "applies equally to marks that damn Democrats and Republicans, capitalists and socialists, and those arrayed on both sides of every possible issue" and "denies registration to any mark that is offensive to a substantial percentage of the members of any group."[57]

The Court concluded that the Disparagement Clause is viewpoint discrimination because "[g]iving offense is a viewpoint" and that it cannot be saved by analyzing it as a type of government program in which some content and speaker based restrictions are permitted.[58]

2. Commercial Speech Analysis

Justice Alito's majority opinion then turned to whether trademarks are commercial speech and are thus subject to the relaxed scrutiny test as outlined by the *Central Hudson* case.[59] The USPTO and the *amici* that supported the USPTO's position argued that trademarks are commercial speech because the central purposes of trademarks are commercial and that federal law regulates trademarks to promote fair and orderly interstate commerce, while Tam and his *amici* argued that many, if not all, trademarks have an expressive component beyond simply identifying the source of a product or service and go on to say something more, either about the product or service or some broader issue (such as "THE SLANTS" mark at issue in the case, which not only identifies the band, but also expresses a view about social issues).[60] The Court determined that the debate need not be resolved because the Disparagement Clause did not withstand even relaxed scrutiny review under *Central Hudson*, which requires that a restriction of speech serve a "substantial interest" and be "narrowly drawn" in order to be constitutional

[55] *See Rosenberger*, 515 U.S. at 830-31.
[56] *See id.* at 831.
[57] *Tam*, slip op. at 22.
[58] *Id.* at 22-23. The Court states that they have "said time and again that 'the public expression of ideas may not be prohibited merely because the ideas are themselves offensive to some of their hearers.'" *Id.* at 22-23 (citations omitted).
[59] *Id.* at 23 (citing Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n of N.Y., 447 U.S. 557 (1980)).
[60] *Tam*, slip op. at 23-24.

under the First Amendment. This means that "[t]he regulatory technique may extend only as far as the interest it serves."[61]

The Court reached the conclusion that the Disparagement Clause failed *Central Hudson* relaxed scrutiny review because even though the Disparagement Clause served two interests—the first being the Government's interest in preventing speech expressing ideas that offend[62] and the second being protecting the orderly flow of commerce[63]—the Disparagement Clause was not "narrowly drawn" to those interests. That is, the Disparagement Clause was not "narrowly drawn" to drive out trademarks that support "invidious discrimination" because it reached any trademark that disparaged "*any person, group, or institution*," applying to trademarks such as "Down with racists", "Down with sexists", "Down with homophobes."[64] In that respect, the Disparagement Clause was not an anti-discrimination clause, it was a "happy-talk clause" and in this way, it went "further than is necessary to serve the interest asserted."[65] The Court also stated that the Disparagement Clause was overly broad because it protected every person living or dead as well as every institution.[66] The Court finally addressed a "deeper problem" with the argument that commercial speech may be cleansed of any expression likely to cause offense because

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[61] *Id.* at 24 (citing *Cent. Hudson*, 447 U.S. at 564-65).

[62] *Tam*, slip op. at 24. The court points out that one way to achieve this interest is to prevent "underrepresented groups" from being "bombarded with demeaning messages in commercial advertising." *Id.* at 24-25 (citing In re Tam, 808 F.3d 1321, 1364 (2015) (Dyk, J., concurring in part and dissenting in part)). It also notes that an amicus supporting the USPTO suggests that the disparagement clause serves this interest by "encouraging racial tolerance and protecting the privacy and welfare of individuals." *Id.* at 24-25 (citing Brief for Native American Organizations as Amici Curiae at 21, Matal v. Tam, 582 U.S. __ (2017) (No. 15-1293)). Nonetheless, the court states that "[s]peech that demeans on the basis of race, ethnicity, gender, religion, age, disability, or any other similar ground is hateful; but the proudest boast of our free speech jurisprudence is that we protect the freedom to express 'the thought that we hate.'" *Tam*, slip op. at 25 (citing United States v Schwimmer, 279 U.S. 644, 655 (1929) (Holmes, J., dissenting)).

[63] *Tam*, slip op. at 25 (citing *Tam*, 808 F.3d at 1380-81 (Reyna, J., dissenting)) ("Commerce, we are told, is disrupted by trademarks that 'involv[e] disparagement of race, gender, ethnicity, national origin, religion, sexual orientation, and similar demographic classification.' . . . . Such trademarks are analogized to discriminatory conduct, which has been recognized to have an adverse effect on commerce.")). *See* Brief for Petitioner at 49, Matal v. Tam, 582 U.S. __ (2017) (No. 15-1293); *see also* Brief for Native American Organizations as Amicus Curiae, *supra* note 62, at 18-21.

[64] *Tam*, slip op. at 25.

[65] *Id.*

[66] *Id.* at 25-26. "Is it conceivable that commerce would be disrupted by a trademark saying: 'James Buchanan was a disastrous president' or 'Slavery is an evil institution'?" *Id.* at 26.

> [t]he commercial market is well stocked with merchandise that disparages prominent figures and groups and the line between commercial and non-commercial speech is not always clear, as this case illustrates. If affixing the commercial label permits the suppression of any speech that may lead to political or social 'volatility,' free speech would be endangered.[67]

For all the above reasons, the Court majority held that the Disparagement Clause violated the Free Speech Clause of the First Amendment.

D. Justice Kennedy's Concurring Opinion

Justice Kennedy's concurring opinion, which Justices Ginsburg, Sotomayor and Kagan joined, stated that the Court correctly held that the Disparagement Clause engaged in viewpoint discrimination, but explains in greater detail why the First Amendment's protections against viewpoint discrimination apply to "THE SLANTS" trademark here. Justice Kennedy submitted further that the viewpoint discrimination rationale renders unnecessary any extended treatment of other questions raised by the parties.[68]

First, Justice Kennedy explained that the First Amendment guards against laws "targeted at specific subject matter," a form of speech suppression known as content based discrimination, which includes a subtype of laws that are aimed at the suppression of "particular views…on a subject." Furthermore, a law found to discriminate based on viewpoint is an "egregious form of content discrimination," which is "presumptively unconstitutional."[69] Justice Kennedy went on to state that, at its most basic, the test for viewpoint discrimination is whether—within the relevant subject category—the government has singled out a subset of messages for disfavor based on the views expressed. In the present case, the Disparagement Clause reflected the Government's disapproval of a subset of messages it found offensive, which is the essence of viewpoint discrimination.[70]

Justice Kennedy dismissed the Government's argument that the Disparagement Clause was viewpoint neutral because it applied in equal measure to any trademark that demeans or offends, noting that it missed the point because a "subject that is first defined by content and then regulated or censored by mandating only one sort of comment is not viewpoint neutral," and to "prohibit all

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[67] *Id.* at 26.
[68] Matal v. Tam, No. 15-1293, slip op. at 1 (U.S. June 19, 2017) (Kennedy, J., concurring).
[69] *Id.* at 2.
[70] *Id.* at 2-3.

sides from criticizing their opponents makes a law more viewpoint based, not less so."[71] In response to the Government's argument that the Disparagement Clause was viewpoint neutral because it applied to trademarks regardless of the applicant's personal views or reasons for using the mark, Justice Kennedy stated that the Government may not insulate a law from charges of viewpoint discrimination by tying censorship to the reaction of the speaker's audience.[72] Justice Kennedy stated:

> [i]ndeed, a speech burden based on audience reactions is simply government hostility and intervention in a different guise. The speech is targeted, after all, based on the government's disapproval of the speaker's choice of message. And it is the government itself that is attempting in this case to decide whether the relevant audience would find the speech offensive. For reasons like these, the Court's cases have long prohibited the government from justifying a First Amendment burden by pointing to the offensiveness of the speech to be suppressed.[73]

Justice Kennedy summarized the contradictory folly of the Disparagement Clause by stating that "the dissonance between the trademark's potential to teach and the Government's insistence on its own, opposite, and negative interpretation confirms the constitutional vice of the statute."[74]

Second, turning to the commercial speech and government subsidy analysis, Justice Kennedy stated that, to the extent that trademarks qualify as commercial speech, they are an example of why that term or category does not serve as a blanket exemption from the First Amendment's requirement of viewpoint neutrality, and in the realm of trademarks, the metaphorical marketplace of ideas

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[71] *Id.* at 3 ("The logic of the Government's rule is that a law would be viewpoint neutral even if it provided that public officials could be praised but not condemned. The First Amendment's viewpoint neutrality principle protects more than the right to identify with a particular side. It protects the right to create and present arguments for particular positions in particular ways, as the speaker chooses. By mandating positivity, the law here might silence dissent and distort the marketplace of ideas.").

[72] *Id.* at 3-4 ("The danger of viewpoint discrimination is that the government is attempting to remove certain ideas or perspectives from a broader debate. That danger is all the greater if the ideas or perspectives are ones a particular audience might think offensive, at least at first hearing. An initial reaction may prompt further reflection, leading to a more reasoned, more tolerant position.").

[73] *Id.* at 4.

[74] *Id.* at 4-5.

becomes a tangible, powerful reality.[75] Justice Kennedy stated that the question here is not how other provisions of the Lanham Act square with the First Amendment. Rather, the Court's precedents recognized just one narrow situation in which viewpoint discrimination is permissible: where the government itself is speaking or recruiting others to communicate a message on its behalf.[76] Justice Kennedy also pointed out that this case does not involve the situation where private speakers are selected for a government program to assist the government in advancing a particular message.[77] Finally, Justice Kennedy concluded by stating that a law like the Disparagement Clause can be directed against speech found offensive to some portion of the public and can be turned against minority and dissenting views to the detriment of all.[78] The "First Amendment does not entrust that power to the government's benevolence" and "[i]nstead, our reliance must be on the substantial safeguards of free and open discussion in a democratic society."[79]

Justice Thomas, in his concurring opinion, joined in all aspects of Justice Alito's majority opinion except with respect to Part II, rejecting Tam's interpretation arguments on "persons" within the Disparagement Clause, because he saw no reason to address this legal question in the first instance.[80]

Justice Thomas also wrote separately because he continued "to believe that when the government seeks to restrict truthful speech in order to suppress the ideas it conveys, strict scrutiny is appropriate, whether or not the speech in question may be characterized as 'commercial.'"[81] However, Justice Thomas joined in Part IV of Justice Alito's opinion because he opined that it correctly concluded that the

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[75] *Id.* at 5-6 ("Here that real marketplace exists as a matter of state law and our common law tradition, quite without regard to the Federal Government. These marks make up part of the expression of everyday life, as with the names of entertainment groups, broadcast networks, designer clothing, newspapers, automobiles, candy bars, toys and so on. Nonprofit organizations – ranging from medical research charities and other humanitarian causes to political advocacy groups – also have trademarks, which they use to compete in a real economic sense for funding and other resources as they seek to persuade others to join their cause. To permit viewpoint discrimination in this context is to permit Government censorship.").

[76] *Id.* at 6-7.

[77] *Id.* at 7.

[78] *Id.* at 8.8

[79] *Id.*

[80] *Matal v. Tam*, No. 15-1293, slip op. at 1 (U.S. June 19, 2017) (Thomas, J., concurring).

[81] *Id.* (citing Lorillard Tobacco Co. v. Reilly, 533 U.S. 525, 572 (2001) (Thomas, J., concurring in part and concurring in judgment); 44 Liquormart, Inc. v. Rhode Island, 517 U.S. 484, 518 (1996) (same)).

Disparagement Clause was unconstitutional even under the less stringent test of *Central Hudson* review.[82]

II
PREDICTIONS ON THE AFTERMATH OF *MATAL V. TAM*

Simon Tam had this to say about the period leading up to and after the Supreme Court opinion was delivered in *Matal v. Tam*:

> After we won our case in a federal court, the Trademark Office asked the Supreme Court to review the case. That very same week, the office granted another new registration for "slant" to a company that makes industrial coils. I may be the only person denied a registration for "slant" because it was deemed offensive to Asian-Americans.
>
> This week, the Supreme Court reversed the Trademark Office's decision, striking down the law that denied trademark protection to names deemed derogatory. Some supporters of that law claim that offensive names will now routinely receive trademark protection. (The Washington Redskins is a widely cited example.) But my response is that the Trademark Office doesn't have the cultural understanding to determine what is or isn't racist.[83]

Now that the Disparagement Clause has been ruled unconstitutional, will there be a flood of offensive trademarks filed with the USPTO? What about other marks previously denied or cancelled under the Disparagement Clause, such as the Washington Redskins mark? This paper predicts that there will not be a substantial increase in offensive mark filings, due to goodwill concerns and common business sense. Additionally, the fact that the Disparagement Clause survived for nearly 70 years despite major First Amendment concerns suggests that issues with disparaging marks are relatively uncommon.

Only in rare cases where businesses have successfully built up goodwill in a mark, despite the mark being potentially disparaging or offensive—such as the Washington Redskins trademark—would the mark be worth registering with the USPTO. This leaves the opportunity to register trademarks for "self-disparagement," political, or artistic reasons or to reappropriate or reclaim a term, which encourages the free-flow of expression in an ever-changing marketplace of

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[82] *Tam*, slip op. at 1 (Thomas, J., concurring).
[83] Tam, *supra* note 8.

ideas. Encouraging freedom of expression from these groups outweighs any concerns raised by potential, though unlikely, excessive filing of offensive marks.

A. Low Probability of Highly Offensive Mark Filings

An immediate knee-jerk prediction to *Matal v. Tam* might be a sharp increase in the filing of offensive or derogatory marks with the USPTO. One attorney remarks that the "Trademark Official Gazette may soon require a parental advisory on the cover."[84] But there is reason to believe this concern is blown out of proportion.

The main reason why offensive filings likely will not increase is that there is no indication that there were many offensive mark filings awaiting registration (or were denied registration due to the Disparagement Clause) to begin with. Why else would it have taken nearly 70 years for a trademark applicant to challenge the statute?[85] Simon Tam and The Slants also challenged the statute at roughly the same time as the Washington Redskins did (give or take several years). It appears that the interest in obtaining a disparaging mark is not high amongst brands, companies or groups. In other words, there may not be many trademark applicants who wish to register offensive marks generally.

To see why this may be the case, we should look to underlying psychological concerns and motivations of both purchasing consumers and businesses that wish to thrive. Common business sense would dictate that naming one's company, group, or brand after an offensive word or slur would not exactly be good marketing.[86]

Other factors potentially preventing an increase in the registration of marks are the burdens of acquiring registration of a mark, which are rigorous and not to be underestimated.[87] To register a mark, applicants must show that they will

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[84] Donahue, *supra* note 4 (quoting attorney Christopher Larus of Robins Kaplan LLP).

[85] *See id.* ("That's one of the reasons it took 70 years for the disparagement bar to fall; there just have never been that many companies clamoring to use revolting phrases as trademarks on their products. 'As a practical matter, I don't think I've ever filed an application that falls into these categories, and I've been doing this for over 20 years,' said Cynthia Walden, the head of the trademark group at Fish & Richardson PC. 'It just doesn't really come up much.'").

[86] *See id.* ("First and foremost is the fact that offensive subject matter, even if you can now technically register it, is simply bad branding—sort of a big deal when talking about trademarks. 'You still have to live in the world and you still have to deal with public opinion,' said Timothy J. Kelly, a partner with McCarter & English LLP. 'If people are going to look at that [registered] term and be turned off immediately, you're not going to sell much.'").

[87] *See id.* ("As for those who do rush to file applications for objectionable subject matter in the wake of the ruling, experts say they will still face big hurdles at the trademark office, even in

actually use the mark in commerce – which may be unlikely for holders of offensive marks.[88] Furthermore, "merely ornamental" marks that do not serve the source identifying purpose behind trademarks will also likely not be registered.[89] The other barriers present in the registration process will likely discourage many applications from registering offensive marks. Many will likely give up after realizing the difficulty.

Beyond the registration process, there are other business reasons to not adopt disparaging marks. The "shock factor" of such marks are often temporary or transient at best. Building goodwill, brand loyalty, and trust in the marketplace would prove difficult by relying solely on such a gimmick. There have been examples of marks from French Connection United Kingdom (who stylized their shirts as "fcuk" to mimic the word "fuck"), but that company registered a mark on a misspelling of a cuss word that also happened to be the acronym for its company. One can hardly imagine that company or a similarly situated one now being able to register a mark for "fuck" and generating substantial business from it.

Additionally, the post-*Matal* Federal Circuit case of *In re Brunetti* reversed the rejection of the mark "FUCT" for various items of clothing under Section 2(a) because the Lanham Act's ban on registering immoral or scandalous trademarks was unconstitutional on First Amendment grounds, as held by *Tam*.[90] There may be

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a post-Slants world. Many of them will be shot down for the same reason as applications for 'Covfefe,' 'Nasty Woman' and other trending terms: The applicant fundamentally misunderstands what a trademark registration is. 'Registration requires more than just filing an application to register registrable matter and paying a fee," said Alexandra Roberts, a professor at the University of New Hampshire School of Law. Applicants who race out to register must show that they have a bona fide intent to use the name on a particular set of goods and services.").

[88] *See id.* ("To get fully registered, they then need to have the capacity to actually use the term as a trademark in commerce. Some of the folks who descend on the USPTO in the wake of the high court's decision might certainly meet those requirements, but many more likely won't. 'The applicants often aren't serious about making the kind of use necessary to acquire trademark rights,' Roberts said.").

[89] *See id.* ("The trademark office will also refuse to register any mark that's 'merely ornamental,' as well as widespread terms that are used by numerous third parties, because neither serves the source-designating function that's required of a trademark. Those are two more big sticking points that could stem the tide. 'Post-Tam, we can expect producers who have long used disparaging marks to register them with little fanfare,' Roberts said. 'But when it comes to individuals looking to capitalize on a controversial phrase, many of their applications won't pass muster.'").

[90] In re Brunetti, 877 F.3d 1330, 1335 (Fed. Cir. 2017) ("Erik Brunetti appeals from the decision of the Trademark Trial and Appeal Board ("Board") affirming the examining attorney's refusal to register the mark FUCT because it comprises immoral or scandalous matter under 15

individuals or companies out there who believe registering offensive marks can lead to promising business opportunities.[91] This may be a new, exciting, and wide-open market, as some commentators suggest that the *Brunetti* case further expands the realm of potentially offensive subject matter now protectable by federal trademark registration.[92]

U.S.C. § 1052(a) ('§ 2(a)'). We hold substantial evidence supports the Board's findings and it did not err concluding the mark comprises immoral or scandalous matter. We conclude, however, that § 2(a)'s bar on registering immoral or scandalous marks is an unconstitutional restriction of free speech. We therefore reverse the Board's holding that Mr. Brunetti's mark is unregistrable."); Dennis Crouch, *We are all FUCT*, PATENTLYO, (December 15, 2017), https://patentlyo.com/patent/2017/12/we-are-all-fuct.html ("Here, the Federal based its decision on content-based discrimination (rather than viewpoint based) which is also reviewed for strict scrutiny. In reaching its decision, the Federal Circuit rejected two particular arguments, holding: 1. Trademark Registration is Not a Government Subsidy Program: If it were a subsidy, then the government could place conditions on the program without violating free speech principles (so long as those are not unconditional conditions). 2. Trademark Registration is more than commercial speech because it does "more than propose a commercial transaction" and often involve expressive conduct. If it were pure commercial speech, then restrictions would be reviewed under a looser standard. However, here the court holds that the immoral or scandalous mark provision 'is unconstitutional even if treated as a regulation of purely commercial speech.'").

[91] Indeed, the Federal Circuit commented on this issue. *See Brunetti*, 877 F.3d at 1354 ("Even marks that reference the indisputably vulgar term 'fuck,' like the mark at issue here, are not always rejected as a matter of course. The PTO registered the mark FCUK, but rejected the marks FUCT and F**K PROJECT as scandalous. It allowed the registration of MUTHA EFFIN BINGO, Reg. No. 4,183,272, and IF WE TOUCH IT, IT'S FN GOLDEN, Reg. No. 4,100,978, but not F ALL F'S APPAREL FOR THE F'N ANGRY, Appl. No. 78,420,315.").

[92] *See* Beth Goldman, Diana Rutowski, Kristin Cornuelle & Chris Civil, *Federal Circuit Makes Way for FUCT, Striking Down the Statutory Bar on Immoral or Scandalous Trademark Registrations as Unconstitutional*, ORRICK INTELLECTUAL PROPERTY ALERT (Dec. 20, 2017), https://www.orrick.com/Insights/2017/12/Federal-Circuit-Makes-Way-for-FUCT ("On December 15, the U.S. Court of Appeals for the Federal Circuit struck down the Lanham Act's ban on registering immoral or scandalous trademarks as unconstitutional on First Amendment grounds in *In re Brunetti*, --- F.3d ---- (Fed. Cir., Dec. 15, 2017, No. 2015-1109). This decision followed just a few months after the Supreme Court's significant holding in *Matal v. Tam*, 137 S. Ct. 1744 (2017), which invalidated the disparagement clause of the Lanham Act on the same grounds. In re Brunetti further expands the new world of potentially offensive subject matter now eligible for federal trademark protection. At issue was Erik Brunetti's application to register the mark FUCT for various items of clothing. The Examining Attorney refused registration under Section 2(a) of the Lanham Act, finding that the mark comprised immoral or scandalous subject matter because FUCT is the past tense of the vulgar verb 'fuck.' The Trademark Trial and Appeal Board affirmed the Examining Attorney's refusal, citing dictionary definitions uniformly characterizing the word 'fuck' as offensive and several images showing Brunetti using the mark in connection with explicit sexual imagery. The Federal Circuit agreed that the mark

In the context of racial slurs or words considered insulting to a group (be it political, religious, cultural, etc.), there is even less motivation for a company to brand themselves or a product after such disparaging terms. Not only could they risk alienating large segments of customers with such a choice, but that decision would also chip away and deteriorate whatever sense of reputation or goodwill that company has already built up. Therefore, the scenario in which companies will flock to the USPTO to register disparaging marks seems highly unlikely, unless the company wishes to commit a form of brand suicide. Scandalous, "shocking" advertising campaigns can be achieved through marks like FUCT, now permissible in light of *In re Brunetti*. Individuals and companies can achieve the same or similar marketing results without using disparaging marks, which run the risk of alienating potential consumers.

B. The Washington Redskins Mark

One class of now-registerable disparaging or offensive marks is the type of mark that has already built up years of goodwill, brand recognition and notoriety. A perfect example of this group of marks is the Washington Redskins mark, which was challenged in litigation both in federal courts and the TTAB.[93] However, as even Justice Alito mentioned in the majority opinion of *Matal v. Tam,* there have been many other marks considered derogatory, offensive and/or disparaging to minority groups registered due to the nature of the times.[94] The difference with this class of marks is that they have already spent years of time, resources and money building up their brand with an already registered mark—whereas potential trademark owners wishing to now register offensive marks in the wake of *Matal v. Tam* have to start from nothing, and will likely acquire nothing to build their brand, due to the analysis discussed above in Part III(A).

Even though marks like the Washington Redskins trademark or "FUCT" are valid after the *Matal v. Tam* and *In re Brunetti* cases, there is some solace for groups disparaged by such marks. These marks are few and far between. The other

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was vulgar and scandalous, but then turned to examine the constitutionality of the immoral or scandalous clause of Section 2(a) . . . The potential subject matter of registrable trademarks has, for the second time in just a few months, expanded considerably. It will be interesting to see how these new court interpretations affect trademark application filings in the New Year.").

[93] *See* Pro-Football, Inc. v. Harjo, 415 F.3d 44 (D.C. Cir. 2005); Blackhorse v. Pro-Football, Inc., 111 U.S.P.Q.2d 1080 (T.T.A.B. 2014) (Trademark Trial and Appeal Board ("TTAB") case involving the Washington Redskins trademark).

[94] Such marks were "likely attributable not to the acceptance of his interpretation of the clause but to other factors – most likely the regrettable attitudes and sensibilities of the time in question." *Tam*, slip. op at 12.

offensive marks registered according to the condition of standards at the time (as mentioned by Justice Alito), have either expired or are not used by any businesses or enterprises considered even remotely successful.

C. Free Speech Interests Outweigh Offensive Mark Filings

Regardless, a compelling countervailing interest outweighs the concern of increased filing of offensive marks. That interest is our ability to give certain artists or organizations like "The Slants" or "Dykes on Bikes" the right to "self-disparage." By allowing such groups to fully exercise their Free Speech rights under the First Amendment, the robustness of speech will increase and the marketplace of ideas will be diversified. Groups like The Slants will also be able to reclaim and reappropriate previously offensive terms in order to gain cultural or political ground in other arenas. As mentioned before by the New York Times article penned by Simon Tam, there is power in reappropriation. The possibilities that this hybrid Free Speech trademark right gives to individuals and groups like The Slants and Dykes on Bikes is limitless, and should be encouraged in order to fully reach the potential envisioned by the First Amendment.

Notably, filers after the *Matal v. Tam* case have been primarily aiming to "take back" racial slurs and reappropriate them—from an African American applicant attempting to register "nigga" in order to "reclaim the word" and "sell T-shirts that celebrate themes such as unity and brotherhood" to a patent lawyer in Alexandria, Virginia trying to register the swastika in order to "put it in a drawer and make sure nobody uses it" by selling merchandise such as blankets, shirts, and flags for the exorbitantly expensive price of a thousand dollars each.[95] These examples suggest that the *Tam* decision has sparked reappropriation of disparaging terms and images, rather than promoted disparagement of minority groups.

III
COMPARISONS TO PATENT LAW & COPYRIGHT LAW

This new hybrid Free Speech and Trademark right can also be compared with approximate equivalents in Copyright Law and Patent Law to argue that the trademark right, by itself, will not suffer any detriment in being merged with Free Speech rights and may in fact see positive benefits.

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[95] Ailsa Chang, *After Supreme Court Decision, People Race To Trademark Racially Offensive Words*, NPR PLANET MONEY (Jul. 21, 2017, 4:25 PM), http://www.npr.org/2017/07/21/538608404/after-supreme-court-decision-people-race-to-trademark-racially-offensive-words.

Taking copyright law as the first example, copyrights can be obtained and registered for offensive material, mainly because copyrights are so closely tied to expression and are in fact "an engine of free expression."[96] Being able to copyright anything, even if it is offensive, makes the copyright form of intellectual property stronger, more diverse, and more robust. The same effect will likely occur for this new Trademark and Free Speech right created in the wake of *Matal v. Tam.*

As for Patent Law, there is an outdated and hardly invoked provision from the Atomic Energy Act of 1954 that prohibits the patenting of inventions used for atomic weapons.[97] This provision is somewhat of a "moral" clause, comparable to the Disparagement Clause. This provision has hardly ever been used or cited by the USPTO, or challenged by courts, and thus has a limited impact on patent rights. Thus, the Atomic Energy Act in Patent Law, which runs "parallel" to the Disparagement Clause, goes to show the limited impact such moral provisions have on intellectual property rights.[98]

CONCLUSION

For the reasons described above, this paper asserts that there will not be a substantial increase in the filings of offensive marks post-*Matal v. Tam*, and that the free speech interests of groups like The Slants and Dykes in Bikes is sufficient justification for the Free Speech Trademark hybrid right to exist. In addition, upon comparisons to roughly equivalent fields such as Copyright and Patent Law, infusing Free Speech rights into the Trademark intellectual property right can only make trademarks stronger.

Perhaps it would be fitting to end with Simon Tam's final comments on the case and the outcome of *Matal v. Tam* in the U.S. Supreme Court, in the op-ed he penned for The New York Times:

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[96] Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 558 (1985).

[97] 42 U.S.C. § 2181 (2012) ("No patent shall hereafter be granted for any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon").

[98] Being able to patent anything does not translate exactly to being able to say or express anything, due to the fact that the moral implications of technology might be a complicated subject that goes beyond Free Speech First Amendment rights. On a related note, there does not appear to be any free speech restrictions on what to title a patent or particular words that can be placed within a patent (e.g. in the specification, claims and/or abstract). Therefore, from a strictly verbal basis — the expressive content of a patent application can be viewed now as being equivalent to the expressive content in copyrights and now, trademarks.

Social theorists say that our identity can both be influenced by as well as influence the world around us. Every scientific study confirms that the stigma of derogatory terms like “queer” and “bitch” are mediated by perceived power when the referenced groups own them. The role of the government shouldn’t include deciding how members of a group define themselves. That right should belong to the community itself.

The battles about hate speech shouldn’t be waged at the Trademark Office, decided by those who have no connections to our communities. Those skirmishes lead to arbitrary, inconsistent results and slowly chip away at the dignity and agency of oppressed people to decide appropriateness on our terms. A person’s quality of life, opportunities and rights may hinge on that person’s identity. Those rights should not hinge on the hunch of a government employee armed with wiki-joke websites. It’s suppression of speech in the most absurd manner.

Americans need to examine our systems of privilege and the ways unconscious bias affects our attitudes. But that discussion begins with the freedom to choose our language. As we sing on “From the Heart” on our latest album, “The Band Who Must Not Be Named”:

So sorry if you take offense

But silence will not make amends

The system’s all wrong

And it won’t be long

Before the kids are singing our song.[99]

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[99] Tam, *supra* note 8.

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THE "*ENHANCED NO ECONOMIC SENSE*" TEST: EXPERIMENTING WITH PREDATORY INNOVATION

DR. THIBAULT SCHREPEL*

This paper originates from a long-standing anachronism of antitrust law with regard to high-tech markets. Conventional wisdom assumes that antitrust law mechanisms are well suited to the study of practices in technology markets and that only adjustments should be made to these mechanisms, and sparingly at that. This is untrue. Several practices fall outside the scope of antitrust law because mechanisms for assessing the legality of practices are not adequate. In fact, no one can accurately identify a typical legal approach for non-price strategies, a truth which gives way for a chaotic jurisprudence to emerge from this lack of universal understanding, which we will show.

With this paper, our ambition is to contribute to the literature by advancing a new test, the "enhanced no economic sense" test, to be applied to non-price strategies. Various tests have been designed over the years to address the legality of diverse practices under antitrust law. Some of them are based on price analysis, including the test of the equally efficient rival, the rising rivals' costs test, and the profit sacrifice test. Some others are based on comparison, such as the balancing test, the test of disproportionality, and the compatibility test. They all suffer from multiple flaws. None of them, in fact, address non-price strategies such as predatory innovation without creating numerous type-I or II errors.[1] *Conversely, the test proposed in this article results in the*

* Thibault Schrepel (Ph.D., LL.M.) is a research associate at the Sorbonne-Business & Finance Institute, University of Paris I Panthéon-Sorbonne. He leads the "innovation" team of Rules for Growth and is the Revue Concurrentialiste creator. His personal website is www.thibaultschrepel.com. Your comments on this article are more than welcome (thibaultschrepel@me.com). I would like to thank the editors of the NYU Journal of Intellectual Property & Entertainment Law for their constructive editing.

[1] Type-I errors, also called "false positives," occur when a court—or a competition authority—wrongly condemns a company for having implemented practices which, in fact,

creation of a uniform rule of law, which will ultimately increase consumer welfare by encouraging companies to continue innovating, while limiting such type-I or II errors.

Only the "no economic sense" test comes close to achieving this goal, which is why this article proposes a new version of the mechanism. Its utility is shown by applying it to most of the major cases which dealt with predatory innovation, namely, Berkey Photo, the North-American and European versions of the Microsoft case, and the iPod iTunes Litigation.

are not anti-competitive. On the contrary, type II errors, also known as "false negatives," occur in the absence of condemnation of a practice that is anti-competitive and should therefore have been condemned.

INTRODUCTION

"To evaluate is to create.

Hear this, you creators!"

– Friedrich Nietzsche

This paper originates from a long-standing anachronism of antitrust law with regard to high-tech markets. Conventional wisdom assumes that antitrust law mechanisms are well suited to the study of practices in technology markets and that only *adjustments* should be made to these mechanisms, and sparingly at that.[2] This is untrue. Several practices fall outside the scope of antitrust law because the mechanisms for assessing the legality of practices are not adequate. In fact, no one can accurately identify a typical legal approach for non-price strategies, a truth which gives way for a chaotic jurisprudence to emerge from this lack of universal understanding, which we will show.[3]

This article further aims to contribute to the literature by advancing a new test, the "*enhanced no economic sense*" ("*ENES*") test, to be applied to non-price strategies.[4] We show why applying it with consistency will help to simplify the law while avoiding legal errors – two goals that all of the tests aiming to assess the legality of practices under antitrust law should reach.[5] Some of these tests, which are too permissive, generate many type-II errors but are easily understandable, and thus, increase legal certainty. Others, which are better suited and, in theory, allow avoidance of legal errors, are too complex to be applied by the courts and, above all, to be understood by laymen.[6] But one must not give up. Antitrust law is not condemned to remain blind to certain technical problems or, on the contrary, to be incomprehensible to the ordinary man. The "*ENES*" test brings a solution of reason to this long-standing issue.

We should not adopt a new test without first ensuring that it would allow courts and antitrust authorities to take a position in each individual case and that rulings would benefit consumers as a result.[7] Here again, the "*enhanced no*

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[2] For an overview, *see* Michael L. Katz & Howard A. Shelanski, *"Schumpeterian" Competition and Antitrust Policy in High-Tech Markets*, 14 COMPETITION 47 (2005).

[3] OECD Policy Roundtables, *Predatory Foreclosure*, DAF/COMP(2005)14, at 48-59.

[4] Predatory innovation, which we previously identified as being one of the key issues in terms of high-tech markets, illustrates our point. *See* Thibault Schrepel, *Predatory Innovation: The Definite Need for Legal Recognition*, SMU SCI. & TECH. L. REV. (forthcoming 2018); *see also*, Thibault Schrepel, *Predatory innovation: A response to Suzanne Van Arsdale & Cody Venzke*, HARV. J.L. & TECH. Dig. (2017), http://jolt.law.harvard.edu/digest/digest-note-predatory-innovation.

[5] OECD Policy Roundtables, *Competition on the Merits*, DAF/COMP(2005)27, at 23.

[6] *Id.*

[7] *Id.*

economic sense" test meets this double objective. It also helps to understand why several decisions made in the past are, we will argue, legal errors. The *Microsoft* case[8] is one of them.

In turn, this paper makes a proposal to rethink the way most of the new practices implemented in technology markets are actually evaluated. This study is particularly timely because the development of the issues related to these markets, and the growing interest shown by competition authorities[9] calls for an identified position; one which will not hinder their extraordinary growth.

This paper proceeds in three parts. The first part presents the "enhanced no economic sense" test, ranging from its foundations up to detail of its implementation. The second part probes the test's empirical efficiency, exploring the most important predatory innovation cases on non-price strategy reassessing them through the prism of the "enhanced no economic sense" test, which helps to establish the test's effectiveness. The last part expands these empirical findings and presents our conclusions.

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8 Case COMP/C-3/37.792—Sun Microsystems, Inc. v. Microsoft Corp., Comm'n Decision (Apr. 21, 2004), *available at* http://ec.europa.eu/competition/antitrust/cases/dec_docs/37792/37792_4177_1.pdf [hereinafter "*Microsoft* Decision"].

9 The OECD has recently devoted several roundtables to the subject. *See* OECD Policy Roundtables, *Algorithms and Collusion*, DAF/COMP(2017)4; *see also* OECD Policy Roundtables, *Big Data: Bringing Competition Policy to The Digital Era,* DAF/COMP(2016)14. Most of the world-leading competition authorities have contributed to them too.

I

THE IMPROVED VERSION OF THE "*NO ECONOMIC SENSE*" TEST

The "*no economic sense"* test is best suited to assess non-price strategies—in other words, all those which are unrelated to pricing changes. It complies with most of the characteristics that a test should have—its mechanism is easily understood and most of its criticisms fall short. And yet, the test may be improved to create less type-II errors while retaining its best features. This section details, accordingly, how to design a new version of it.

A. How to Determine Which Test to Apply

Determining which test is best-suited to assess non-price strategies implies considering which goals are to be assigned to antitrust law, and, accordingly, which characteristics the ideal test should have.

1. Regarding the Goals of Antitrust Law

The choice of which test is the most suitable for analyzing non-price strategies involves considering several elements. The first element is related to the goals that must be assigned to antitrust law.[10] These objectives may be grouped into three theories:

1. The "*efficiency theory*":[11] according to this theory, antitrust law's primary goal is to increase economic efficiency. Type-I errors[12] are seen as the greatest evil because they deter investments. Under this theory, there is no presumption of anti-competitive practices simply because a company holds a monopoly power.

2. The "*consumer protection theory*":[13] this theory is based on the idea that the ultimate objective of antitrust law is to benefit consumers, not necessarily to increase economic efficiency. It contemplates criteria other than pure economic ones, such as preventing big mergers or overprotecting small businesses.[14]

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[10] *See generally* Nicholas S. Smith, *Innovative Breakthrough or Monopoly Bullying? Determining Antitrust Liability of Dominant Firms in Exclusionary Product Redesign Cases*, 84 TEMP. L. REV. 995 (2012) (explaining antitrust law objectives).

[11] *Id.* at 1016.

[12] As a reminder, type-I errors, also called "false positives," occur when a court—or a competition authority—wrongly condemns a company for having implemented practices which, in fact, are not anti-competitive.

[13] *See* Smith, *supra* note 10, at 1018.

[14] *See* John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 191 (2008); *see*

3. The "*growth-based theories*":[15] these related theories aim to enhance economic efficiency and prevent unwarranted transfers of consumers' surplus. As a result, innovation is at the center of the debate, unlike theories which are only centered on economic efficiency and which do not necessarily involve the protection of innovation in and of itself.[16]

Most non-price strategies assume there are technological aspects directly related to innovative fields.[17] Accordingly, while evaluating practices' efficiencies, courts must take great care not to impair innovation. For that reason, choosing a test included in the growth-based theories is ideal. The "no economic sense" test evaluates the reason a company has implemented practices and also makes it possible to take innovation and technological breakthroughs into account.

2. In Terms of its Efficiency

The second key component to be studied in order to identify the most appropriate test to detect anti-competitive practices is efficiency.[18] It cautions against multiplying the situations in which the courts are unable to judge

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also Nicolas Petit, *European Competition Law*, 143 (Montchrestien, 2012) *(text in French)* ("the European competition law seems to have decided in favor of this theory.").

[15] We argued that the Neo-Chicago School should seek that goal. *See* Thibault Schrepel, *Applying the Neo-Chicago School's Framework To High-Tech Markets*, REVUE CONCURRENTIALISTE (May 6, 2016), https://leconcurrentialiste.com/2016/05/06/neo-chicago-school-high-tech-markets. Two authors further developed the premises of that school of thought. *See* David S. Evans & A. Jorge Padilla, *Designing Antitrust Rules for Assessing Unilateral Practices: A Neo-Chicago Approach*, 72 U. CHI. L. REV. 27, 33 (2005); *see also* Thomas A. Lambert & Alden F. Abbott, *Recognizing the Limits of Antitrust*, 11 J. COMP. L. & ECON. 791, 793 (2015) ("Neo-Chicagoans reason that 'market self-regulation is often superior to government regulation . . .'").

[16] *See* Herbert Hovenkamp, *Antitrust and Innovation: Where We Are and Where We Should Be Going*, 77 ANTITRUST L.J. 749, 751 (2011) ("[T]he gains to be had from innovation are larger than the gains from simple production and trading under constant technology.").

[17] OECD Policy Roundtables, *Two-Sided Markets*, DAF/COMP(2009)20, 14 ("Firms sometimes use non-price strategies, such as exclusive contracts and product tying, to limit competition or foreclose the market to rivals. These practices have been at the centre of several important competition cases involving two-sided markets.").

[18] Mark S. Popofsky, *Defining Exclusionary Conduct: Section 2, the Rule of Reason, and the Unifying Principle Underlying Antitrust Rules*, 73 ANTITRUST L.J. 435, 477 (2006); see Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 215 (1996) (explaining the necessity to create a straightforward legal standard).

whether some practices must be condemned.[19] It also means avoiding type-I and II errors.

In its 2005 study entitled "*Competition on the Merits*,"[20] the Organization for Economic Co-operation and Development ("OECD") identified six criteria for evaluating various tests' efficiencies.[21] The first relates to their *accuracy*: the tests must be based on accepted economic theories and, meanwhile, must avoid type-I and II errors. The second is linked to their *administrability*, understood as ease of applicability.[22] The third refers to their *applicability*: the tests should cover all of the issues raised by one type of anti-competitive practice. The fourth relates to their *consistency*, which should lead to homogeneous solutions.[23] As underlined by one author, the tests applied to predatory innovation are plural.[24] This should be changed. The fifth emphasizes their *objectivity*. The sixth and final criterion is related to their *transparency*. The tests must aim at defending the goals that have been identified as being the most crucial to antitrust law, *i.e.* the growth-based theories. The ENES test will meet these criteria, as explained below.

B. On Why the "No Economic Sense" Test Is Suitable

1. Its Main Characteristics

The "*no economic sense*" test is based on the simple idea that a practice should be regarded as anti-competitive if it makes sense from an economic point of view only because of its tendency to eliminate or to restrict competition.[25]

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19 OECD Policy Roundtables, *supra* note 5, at 23.

20 *Id.* This study of several hundred pages is extremely rich and remains the reference on the law.

21 *Id.* at 23.

22 *See* John Temple Lang, *Comparing Microsoft and Google: The Concept of Exclusionary Abuse*, 39 WORLD COMPETITION & ECON. Rev. 5, 5 (2016).

23 In terms of predatory innovation, an author already underlined in 1988 that all decisions dealing with the subject had little coherence, and that remains unchanged to this day. *See* Ross D. Petty, *Antitrust and Innovation: Are Product Modifications Ever Predatory*, 22 SUFFOLK U. L. REV. 997, 1028 (1988) ("The decisions to date offer little guidance on how to distinguish a predatory product innovation, if such exists, from a legitimate innovation.").

24 *See* Hillary Greene, *Muzzling Antitrust: Information Products, Innovation and Free Speech*, 95 B.U. L. REV. 35, 72 (2015) ("Unfortunately, the courts have failed to carry over important nuances from the articulation of the legal theory of the anticompetitive product design to that theory's practical application.").

25 Jonathan M. Jacobson & Scott A. Sher, *"No Economic Sense" Makes No Sense for Exclusive Dealing*, 73 ANTITRUST L.J. 779, 782 (2006); *see also* Herbert Hovenkamp, *The Harvard and Chicago Schools and the Dominant Firm*, *in* HOW THE CHICAGO SCHOOL OVERSHOT THE MARK: THE EFFECT OF CONSERVATIVE ECONOMIC ANALYSIS ON US ANTITRUST (Robert Pitofsky ed., Oxford Univ. Press, 2008).

While this test is often presented as being close to the "*profit sacrifice*" test,[26] the fact of the matter is that it differs greatly from it. For instance, when applying the "*no economic sense*" test, a practice may be sanctioned if it makes no sense—besides creating anti-competitive effects—even though it did not involve any losses for the company.[27] At the same time, a practice that involves losses may still be seen as being pro-competitive if it is justified by potential gains in economic efficiency.[28] To the contrary, the profit sacrifice test condemns all practices that involve significant short-term sacrifices.[29] In short, the "no economic sense" test raises the question of *why* the defendant agreed to bear losses, which the profit-sacrifice test does not.

Gregory J. Werden, one of the "no economic sense" test's greatest defenders, also underlined that, according to this test, practices are seen as being anti-competitive when, in addition of having no objectives other than eliminating or restricting competition, they also have the potential effect of restricting competition.[30] Establishing whether the practices have the potential to eliminate the competition is then a prerequisite,[31] and the burden of proof lies on the complainant.[32]

Also, the "no economic sense" test does not imply an *ex-post* evaluation of a practice's effects. Rather the court's duty is to evaluate the practice by taking into account all of the elements available to the dominant firm at the time of its implementation.[33] A practice may have been extremely profitable for reasons that were not anticipated by the company and this should not lead to a finding that the practice is pro-competitive. Also, as Werden notes,[34] a practice may have anti-competitive effects that were unpredictable at the time of its implementation and it should not be used as a means of late condemnation.

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26 Jonathan B. Baker, *Preserving a Political Bargain: The Political Economy of the Non-interventionist Challenge to Monopolization Enforcement*, 76 ANTITRUST L.J. 605, 616 (2010).

27 Gregory J. Werden, *The "No Economic Sense" Test for Exclusionary Conduct*, 31 J. CORP. L. 293, 301 (2006).

28 *Id.*

29 *Id.*

30 OECD Policy Roundtables, *supra* note 5, at 28; *see also* Werden, *supra* note 27, at 301.

31 Gregory J. Werden, *Identifying Exclusionary Conduct Under Section 2: The "No Economic Sense"* Test, 73 ANTITRUST L.J. 413, 417 (2006).

32 *Id.*

33 Janusz Ordover & Robert Willig, *An Economic Definition of Predation: Pricing and Product Innovation*, 91 YALE L.J. 8, 11 (1981).

34 Werden, *supra* note 27, at 304.

In fact, not evaluating the *ex-post* effects produced by a practice and not focusing on its costs are the reasons why the "no economic sense" test—even though it may be used to address non-price *and* price strategies[35]—is even more efficient for practices involving low costs, which is an important difference from the profit sacrifice test. It is then particularly suitable for evaluating predatory innovation, which is why it has led many jurisdictions to apply it in related cases.[36]

Another test called the "*sham test*" could also be suitable because its grounds are similar to the "no economic sense" test.[37] If we consider that innovation is an economic justification in itself, then, applying the "no economic sense" test asks whether the "*innovation*" is genuine or a "*sham*."[38] An "*innovation*" will be considered a "*sham*" if it exists only for its negative effects on competition.[39] In other words, the definition of a "*sham innovation*" is any product modification that does not improve the consumer's well-being in the short or the long term. The similarity of the two tests is particularly enlightening on the definition to be given for predatory innovation. In assessing whether innovation is real,[40] these two tests stand as opposing the vision of pioneer scholars Janusz Ordover & Robert Willig: that even genuine innovations can be anti-competitive.[41]

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[35] *See* Richard J. Gilbert, *Holding Innovation to an Antitrust Standard*, 3 COMPETITION POL'Y INT'L 47, 77 (2007).

[36] Mark S. Popofsky, *Defining Exclusionary Conduct: Section 2 The Rule of Reason, and the Unifying Principle Underlying Antitrust Rules*, 73 ANTITRUST L.J. 435, 446 (2006); *see* Transamerica Computer Co. v. International Bus. Machs. Corp., 698 F.2d 1377 (9th Cir. 1983) (in which the judges agreed that "IBM had no further need for the selector[,]" although "the design choice [was] unreasonably restrictive of competition"); *see also* Computer Prods. v. IBM Corp., 613 F.2d 727 (9th Cir. 1979); *In re* IBM Peripheral Devices EDP, 481 F. Supp. 965 (N.D. Cal. 1979) (in which the court even specified that a change in the technical aspects "was adopted by IBM because it was a product improvement, and even if its effect was to injure competitors, the antitrust laws do not contemplate relief in such situations.")

[37] For a definition of the "sham test," *see* Gilbert, *supra* note 35, at 61.

[38] *Id.* at 62.

[39] *Id.* An author offered an alternative test in which the court has analyze whether the practice restricted innovation in the concerned industry. *See* Robert E. Bartkus, *Innovation Competition Beyond Telex v. IBM*, 28 STAN. L. REV. 285, 327 (1976).

[40] Thomas J. Campbell, *Predation and Competition in Antitrust: The Case of Nonfungible Goods*, 87 COLUM. L. REV. 1625, 1626 (1987) ("[P]redatory conduct can be distinguished from economically beneficial conduct such as innovation, so that antitrust law may effectively impose sanctions on such behavior.").

[41] Steven C. Salop, Strategy, Predation and Antitrust Analysis, Bureau of Economics & Bureau of Competition Joint Report, 302 (Sept. 1981) ("We find that antitrust scrutiny of product innovations is not a priori unwarranted. Surprisingly, we find that even genuine innovations (that is, new products that in some regards are superior to existing ones in the eyes of both engineers and consumers) can in fact be anticompetitive."). This position differs

In short, unlike several other tests, which lead to a finding of anti-competitiveness in genuine innovations that improve the consumer welfare whenever anti-competitive effects are significant,[42] the "sham" and the "no economic sense" tests do not. The reason why the "no economic sense" test is preferable to the sham test is because it also encompasses non-price strategies that are not directly linked to products' modifications, like those related to "low-cost exclusion" as a "refusal to deal".[43] Further, its terminology is self-explanatory to the extent that the terms indicate its analysis mechanism, which can only increase legal certainty.

All of these reasons led to the application of the "no economic sense" test in the US courts[44] in *Aspen Skiing*,[45] *Matsushita Industrial Co., Ltd. v. Zenith Radio Corp. and Brooke Group*,[46] and *US v. AMR Corp*.[47] The Department of Justice and the Federal Trade Commission also argued for applying it in *Trinko*.[48] Instead, the Court applied the profit sacrifice test, without naming it,

from the one held by the Supreme Court. United States v. Grinnell Corp., 384 US 563 (1966). (The Supreme Court held that having a dominant position because of a superior product is not to be condemned: "the offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident."); *see* Mark Furse, *United States v. Microsoft Technology Antitrust*, 13 INT'L REV. L. COMPUTERS & TECH. 237, 241 (1999).

[42] Daniel A. Crane, *Legal Rules for Predatory Innovation*, 2013 CONCURRENCES 4, 5 (2013).

[43] Gregory J. Werden, *The "No Economic Sense" Test for Exclusionary Conduct*, 31 J. CORP. L. 293, 305 (2006).

[44] This test had been applied more regularly in the United States than in Europe.

[45] Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585 (1985).

[46] Matsushita Industrial Co., Ltd. v. Zenith Radio Corp., 475 U.S. 574 (1986); *see also* Brief of the United States and the Appellees States Plaintiffs at 48, United States v. Microsoft Corp., 253 F.3d 34 (DC Cir. 2001) (Nos. 00-5212, 00-5213); Brief for the United States at 33-34, United States v. Dentsply International, Inc., 399 F.3d 181 (3d. Cir. 2005) (No. 03-4097); *see also* R. Hewitt Pate, Assistant Att'y Gen, *The Common Law Approach and Improving Standards for Analyzing Single Firm Conduct*, Speech at the 30th Annual Conference on International Antitrust Law and Policy (Oct. 23, 2003) (available at https://www.justice.gov/atr/speech/common-law-approach-and-improving-standards-analyzing-single-firm-conduct).

[47] *See* US v. AMR Corp., 335 F.3d 1109 (10th Cir. 2003).

[48] *See* Brief for the United States Federal Trade Commission and Amici Supporting Petitioner, Verizon Communications, Inc. v. Trinko, 540 U.S. 398 (2004) (No. 02-682). That probably explains why some authors have argued that the Supreme Court actually implemented the test in *Trinko. But see* U.S. DEP'T OF JUSTICE, COMPETITION AND MONOPOLY. SINGLE-FIRM CONDUCT UNDER SECTION 2 OF THE SHERMAN ACT 40 (2008) ("Similarly, the Trinko Court, while not expressly adopting the no economic-sense test,

by deciding that the dominant company aimed to sacrifice short-term profits in order to compensate for long term ones.[49] Accordingly, criticisms of that decision are irrelevant to the "no economic sense" test.

European courts have also applied the test on several occasions, although they rarely use the exact terms to describe it. For instance, the Court of Justice implemented it in *British Airways*[50] and the General Court of the European Union did the same in *UFEX*[51] and *Telefónica*, referring to practices as "*irrational from an economic point of view*."[52] The test was also applied by national competition authorities in France in *British Airways v. Eurostar*.[53]

2. Inoperative Criticisms

As we have shown, when dealing with predatory innovation, the "no economic sense" test is the best alternative. For that reason, Herbert Hovenkamp proposes applying it to all cases of this kind.[54] The vast majority of criticisms raised against it fall short.

As for consumer protection. Some have denounced all tests based on analyzing predatory innovation's effects on the company that implemented it in any given instance.[55] They argue that antitrust law is about addressing the direct effect of practices on consumers[56] and that the "no economic sense" test does not protect consumer welfare.[57] But this criticism is based on false premises. Assessing whether a practice makes economic sense for reasons other than its anti-competitive aspects is the same as protecting consumer welfare because factors favoring consumer welfare align with economically sensible reasons for

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identified the *Aspen Skiing* defendant's 'willingness to forsake short-term profits to achieve an anticompetitive end' as a key element of the liability finding.").

[49] *See Trinko*, 540 U.S. at 409-416.

[50] Case C-95/04P, British Airways plc v. Comm'n, 2007 E.C.R 1-2331, para. 126.

[51] Case T-60/05, Union Fraçaise de l'Express (Ufex) v. Comm'n, 2007 E.C.R. 3397.

[52] Case T-336/07, Telefonica and Telefonica de España v. Comm'n, not yet reported, para. 139.

[53] Conseil de la concurrence, Eurostar, Decision 07-D-39 (23 November 2007).

[54] *See* Herbert Hovenkamp, *Post-Chicago Antitrust: A Review and Critique*, 2001 COLUM. BUS. L. REV. 257, 332 (2001).

[55] Steven C. Salop, *Exclusionary Conduct, Effect on Consumers, and the Flawed Profit-Sacrifice Standard*, 73 ANTITRUST L.J. 311, 331 (2006); see Alan J, Meese, *Debunking the Purchaser Welfare Account of Section 2 of the Sherman Act: How Harvard Brought Us a Total Welfare Standard and Why We Should Keep It*, 85 N.Y.U. L. REV. 659, 736 (2010).

[56] Alan J. Meese, *Section 2 Enforcement and the Great Recession: Why Less (Enforcement) Might Mean More (GDP)*, 80 FORDHAM L. REV. 1633, 1641 (2012).

[57] Jonathan Jacobson, Scott Sher & Edward Holman, *Predatory Innovation: An Analysis of Allied Orthopedic v. Tyco in the Context of Section 2 Jurisprudence*, 23 LOY. CONSUMER L. REV. 1, 2-4 (2010).

modifying an existing product. In fact, only two situations exist under the "no economic sense" test:

1. If the practice does not pass the test and thus is deemed to be unlawful, the damage to the consumer is certain since the anti-competitive effects of the practice have driven its implementation;

2. If the practice passes the test and is thus considered to be lawful, it may be:
   a. entirely pro-competitive, a situation in which the consumer welfare is necessarily increased;
   b. pro and anti-competitive at the same time (the practice is "*hybrid*"), but the practice is deemed legal as a whole in order not to discourage investments that ultimately benefit the consumer. There is a real danger in micro-analyzing innovation, practice by practice,[58] and applying this test avoids this pitfall to the extent that when practices are considered together a practice may be justified by the presence of another practice that is linked to it.

As for type-II errors.[59] One of the strongest criticisms[60] made to the "no economic sense" test is the courts' supposed inability to evaluate hybrid practices that produce both positive and negative effects on competition.[61] Situations where a practice is economically justified but also involve anti-competitive features are indeed problematic. Predatory innovation is a good example of this; it would be easy for a company to modify one of its products in a small, pro-competitive way, while also implementing a very effective anti-competitive strategy. In fact, creating an analytical framework for this type of

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[58] Professor Crane underlines that, in some situations, a case-by-case analysis may be insufficient, *see* Daniel A. Crane *Does Monopoly Broth Soup Make Bad?*, 76 ANTITRUST L.J. 663, 663 (2010) ("[D]etermining legality on a contract-by-contract or practice-by-practice basis would systematically lead to false negatives").

[59] Type-II errors, also called "false negatives," occur whenever the court—or a competition authority—rules not to convict a company that has implemented anti-competitive practices.

[60] Other critiques are negligible. *See* OECD Policy Roundtables, *supra* note 5, at 29: ("Finally, the NES test would seemingly require a dominant firm that owns a valuable property right to sell or license its property to any rival who needs it to survive and offers a profitable fee for it – even if the dominant firm has never sold or licensed it to anyone. That could damage the incentives to develop or acquire the property right in the first place.").

[61] *Id.* at 28; *see* U.S. DEP'T OF JUSTICE, *supra* note 48, at 43; *see* also, Bonny E. Sweeney, *An Overview of Section 2 Enforcement and Developments*, 2008 WISC. L. REV. 231, 238 (2008).

situation is the *raison d'être* of the "no economic sense" test.[62] This test seeks to avoid balancing the positive and negative effects to the extent that such a process is expensive and uncertain. The ENES test allows for some type-II errors rather than engendering type-I errors that discourage innovation.[63] In short, the "no economic sense" test prefers a result with type-II errors[64] to the possibility of implementing a more intricate test without consistency and accuracy.[65]

As for its simplistic features. Several authors have stressed[66] that some practices could be anti-competitive while being justified from an economic standpoint. This may be the case, for instance, when a company decides not to reveal the existence of several of its patents during a standardization process.[67] In such a case, the firm is implementing an anti-competitive practice although it is economically justified by the fact that it won't necessitate providing extensive information about its patent—which may be a long and expensive process. In essence, the idea is that the "no economic sense" test is too Manichean,[68] and that a dichotomy between practices that are economically justified and practices that are not is far too removed from economic reality to hold true.[69]

Once again, this criticism seems to disregard the very foundations of the "no economic sense" test. The latter does not advocate for penalizing all practices that do not make economic sense, but only does for those that do not make economic sense without anti-competitive reasons behind them.[70] The example in which a company refuses to provide information to standard organizations is then covered.[71] In fact, let us ask the following question: why condemn the implementation of a practice that a company can justify? Antitrust law is not about imposing on all companies to have an overview of the markets

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[62] See *generally* Werden, *supra* note 31.

[63] Type-II errors created by the application of this test will be uncovered after several years, when the strength of the anti-competitive effects will be revealed. *See* U.S. DEPT. OF JUSTICE, *supra* note 48, at 43. On the link between type-I errors and the willingness to invest, *see* Nicolas Petit, *From Formalism to Effects? The Commission's Communication on Enforcement Priorities in Applying Article 82 EC*, 32 WORLD COMPETITION & ECON. REV. 486, 486 (2009).

[64] Jacobson, Sher & Holman, *supra* note 57, at 30; *contra* Popofsky, *supra* note 18, at 443 (2006).

[65] U.S. DEPT. OF JUSTICE, *supra* note *48*, at 40. On the applicability of the test by jurors, *see* Bartkus, *supra* note 39, at 329.

[66] *See* Hovenkamp, *supra* note *25*, at 115.

[67] *Id*.

[68] *See* Jacobson, Sher & Holman, *supra* note *57*, at 7.

[69] Hovenkamp, *supra* note 25, at 115.

[70] *See generally* Werden, *supra* note 27.

[71] *See* Hovenkamp, *supra* note 25, at 115.

on which they operate. Whenever they can justify a practice, it should be authorized, irrespective of its effects on competition.

As for its manageability. Some have pointed out that the "no economic sense" test was inapplicable when predatory practices involved low costs.[72] This statement is incorrect, however, to the extent that this test condemns practices that exclude competitors, regardless of the costs incurred.[73] Similarly, the criticism related to the inability to implement the test in situations where a company would have mixed intentions must be rejected since this test is indifferent to the subjective intention of the company.[74] One may think, finally, that the test is unsuitable for disruptive innovations in which development makes "no economic sense" because they are, for example, driven by an extravagant philanthropist's irrational desire. But the "no economic sense" test does not lead to condemning such innovations either if they do not have solely anti-competitive consequences.[75]

As for giving leeway to the judge. The "no economic sense" test is said to create "safe harbors"[76] which would deprive judges of their utility. In this way, the application of the "no economic sense" test could be contravening the spirit of the rule of reason because it would create *per se* legalities. In reality, applying the "no economic sense" test does not remove the judge from the decision-making process. The judge remains in charge of deciding, according to the law, what constitutes a valid economic justification.[77] Such a role is particularly important as it gives legitimacy to the test as a whole.

As for subjective intent. A distinction should be made between objective and subjective intent. The first—objective intent—is the result of hard evidence, for instance, emails in which the company's CEO has confirmed his intention to modify a product for the sole purpose of reducing competition.[78] The second

[72] Jacobson, Sher & Holman, *supra* note 57; *see also*, Jonathan B. Baker, *Has Preserving Political Bargain: The Political Economy of the Non-Interventionist Challenge to Monopolization Enforcement*, 76 ANTITRUST L.J. 605, 613 (2010). Applying the "no economic sense" test implies determining what is meant by the notion of "cost." *See* Michael A. Salinger, *The Legacy of Matsushita: The Role of Economics in antitrust Litigation*, 38 LOY. U. CHI. L.J. 475, 486 (2007). But the notion of "cost" also is integrated into all other tests. Therefore, it is not specific to the "no economic sense" test.

[73] Werden, *supra* note 31.

[74] *Id.* at 426.

[75] Werden, *supra* note 31.

[76] Gilbert, *supra* note 35, at 61; *see also*, Hovenkamp, *supra* note 54, at 329.

[77] John M. Newman, *Procompetitive Justifications in Antitrust Law*, 48 IND. L.J. (forthcoming 2018).

[78] Pinar Akman, *The Role of Intent in the EU Case Law on Abuse of Dominance*, 39 EUR. L. REV. 316, 318 (2014).

one—subjective intent—implies inferring executives' intentions by analyzing the facts. Some European authors argue for taking subjective intention into account[79] and the Chicago School's scholars have also done so by stressing that the intention is important[80] when evidence of anti-competitive harm cannot be provided by other means.[81] Courts could adopt three different approaches:[82]

1. not taking subjective intent into account;
2. taking subjective intent into account only when it is proved to be useful and without asking for the anti-competitive intent to be shown in order to condemn a practice;
3. taking subjective intent into account so to establish a violation of antitrust law.

In fact, taking subjective intent into account is championed by Phillip Areeda & Herbert Hovenkamp.[83] Courts have taken subjective intent into account in the *C.R. Bard v. M3 Systems*[84] case. It was also the position adopted in the *Microsoft* case.[85] Other cases have followed since then.[86] In fact, several of the tests assessing the legality of unilateral practices take subjective intent into account. The "no economic sense" test does not, which is fortunate for our purposes.[87] In our review, only hard facts and empirical data should be used to establish practices' illegality. In fact, taking a company's subjective intent into account is far too unpredictable because it requires frameless control by the judge. Antitrust law is about pursuing economic efficiency. It should lead to imposing penalties only when the evidence of damage is indisputable.[88] Also,

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79 *Id.* at 317; *see also* Tetra Pak II, Mar. 19, 1991, 1991 O.J. L 72.

80 The authors advocating for giving a role to subjective intent underline that economic instruments do not cover the issue of innovation. They do not explain, however, how intention does. *See* Marina Lao, *Reclaiming a Role for Intent Evidence in Monopolization Analysis*, 54 AM. U. REV. 151, 181 (2004) ("[E]conomic tools cannot predict effects on innovation.").

81 *Id.* Addressing the Chicago school learnings in generic terms is somewhat misleading insofar as it was crossed by different sensibilities. The first Chicago School was more interventionist than its second version.

82 Smith, *supra* note 10, at 1022.

83 *See* Salop, *supra* note 55, at 355.

84 C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340 (Fed. Cir. 1998).

85 *Id.*, at 1372.

86 Lao, *supra* note 80, at 153-54.

87 This test takes objective intent—not subjective—into consideration. On the distinction between the two, *see* Ronald A. Cass & Keith N. Hylton, *Antitrust Intent*, 74 S. CAL. L. REV. 657 (2001). *See also* Akman, *supra* note 78, at 317.

88 This is one of Joshua D. Wright's main contributions to the Federal Trade Commission. *See* Thom Lambert, *Josh Wright and the Limits of Antitrust*, TRUTH ON THE

because innovation is inherently predatory,[89] taking subjective intention into account makes little sense.

Accordingly, some of the European and North American doctrine on this topic opposes the inclusion of subjective intent.[90] Frank H. Easterbrook, for instance, particularly highlighted the fact that analyzing intention did not allow one to distinguish between true monopolization and attempts to monopolize.[91] He stressed that evaluating a company's subjective intention was expensive and had the effect of reducing legal certainty.[92] Further, distinguishing anti-competitive intent from pro-competitive intent may be more difficult than it seems. The language used between business executives may wrongly imply an anti-competitive intention. Considering subjective intention could be particularly harmful for small businesses where the language used by the staff may be more explicit than it is in larger corporations where executives are more sensitized to antitrust rules.

As for behavioral economics. Some authors[93] advocate for incorporating "behavioral economics*"* according to which agents sometimes show a bounded rationality.[94] But the "no economic sense" test wisely rejects any consideration of behavioral economics.[95] No one would argue that agents are rational in every

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MARKET (August 26, 2015), https://truthonthemarket.com/2015/08/26/josh-wright-and-the-limits-of-antitrust [https://perma.cc/QL7B-V4NG].

[89] According to Frank H. Easterbrook, "Firms want (intend) to grow; they love to crush their rivals; indeed, these desires are the wellsprings of rivalry and the source of enormous benefit for consumers . . . the same elements of greed appear whether the entrepreneur wants to please customers or stifle rivals." Frank H. Easterbrook, *Monopolization: Past, Present, Future*, 61 ANTITRUST L.J. 99, 102-03 (1992).

[90] *See* Akman, *supra* note 78, at 317.

[91] *See* A.A. Poultry Farms, Inc. v. Rose-Acre Farm, Inc., 881 F.2d 1396, 1402 (7th Cir. 1989).

[92] Lao, *supra* note 80, at 170.

[93] On behavioral economics growing popularity, *see* Thibault Schrepel, *"Behavioral Economics" in US (Antitrust) Scholarly Papers*, REVUE CONCURRENTIALISTE (April 23, 2014), https://leconcurrentialiste.com/2014/04/23/behavioral-economics-in-u-s-antitrust-scholarly-papers. Also, for a comparative study of how to incorporate behavioral economics, *see* Philipp Hacker, *More Behavioral vs. More Economic Approach: Explaining the Behavioral Divide Between the United States and the European Union*, 39 HASTINGS INT'L & COMP. L. REV. 355, 355 (2016).

[94] Michal S. Gal & Spencer Weber Waller, *Antitrust in High-Technology Industries: A Symposium Introduction*, 8 J. COMP. L. & ECON. 449, 456 (2012).

[95] For a definition, *see* Joshua D. Wright & Judd E. Stone II, *Misbehavioral Economics: The Case Against Behavioral Antitrust*, 33 CARDOZO L. REV. 1517, 1530 (2012) ("[A]ttempts to address irrational human behavior in light of limited cognitive capacity and inherent cognitive failings."); *see also*, Allan L. Shampine, *The Role of Behavioral Economics in Antitrust Analysis*, 27 ANTITRUST 65, 65 (2013).

situation, and further, behavioral economics lacks empirical evidence to be integrated into the decision-making process.[96] Studies of behavioral economics fail, to the best of our knowledge, to reveal consistent trends that might be integrated into the rule of law.[97] It must therefore be set aside—as least for *ex ante* purposes—until it becomes more sophisticated.

As for its long-run effects. Professor Salop highlighted that the "no economic sense" test could lead to legalizing practices that provide an immediate benefit to consumers, such as improving a product, but eliminate competition over the long term, for instance, by removing product compatibility.[98] This would have the effect of increasing prices and thus harming consumers.[99] Such an example, however, assumes that the dominant firm is willing to reduce the usefulness, and therefore the value, of its product by removing its compatibility with other products. This hypothesis also presumes that the company enjoys an absolute monopoly power, because, otherwise, it would be safe to say that competition would actually push it towards compatibility with the aim of creating a network effect.[100] Plus, in the absence of a monopoly power, eliminating compatibility could lead consumers to adopt competing products.[101]

This hypothesis assumes, furthermore, that the dominant firm is present on both the upstream market, concerned by the changes, and a downstream market, where compatible products are. If this is not the case, removing compatibility would be illogical.[102] The example presumes, also, that the market conditions will stay unchanged. It also excludes dynamic efficiency considerations. Indeed, it is required for the dominant firm to *know* that its market shares will remain at a constant level, otherwise, it may not recoup its

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[96] When answering the question "Are you pro or against the use of behavioral economics?", 84.13% say to be in favor. *See* Schrepel, *supra* note 93.

[97] Doctrinal principles often are the excuse to justify applying a certain policy. For instance, the "error-cost" analysis justifies creating type-II errors so as to avoid type-I errors. Behavioral studies pursue a political objective as well as more interventionist theories. Wright & Stone, *supra* note 95; *see also* Alan Devlin & Michael Jacobs, *The Empty Promise of Behavioral Antitrust*, 37 HARV. J.L. & PUB. POL'Y 1009, 1057 (2014).

[98] Salop, *supra* note 55, at 322.

[99] Werden, *supra* note 31, at 427.

[100] Daniel F. Spulber, *Unlocking Technology: Antitrust and Innovation*, 4 J. COMP. L. & ECON. 915, 948 (2008).

[101] Michael L. Katz & Carl Shapiro, *Antitrust in Software Markets*, *in* COMPETITION, INNOVATION AND THE MICROSOFT MONOPOLY: ANTITRUST IN THE DIGITAL MARKETPLACE 29, 66 (Jeffrey A. Eisenach & Thomas M. Lenard eds., 1999).

[102] Christopher S. Yoo & Daniel F. Spulber, *Antitrust, the Internet, and the Economics of Networks*, *in* THE OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS, VOLUME 1 380, 390 (Roger D. Blair & D. Daniel Sokol eds., 2014).

losses.[103] With high-tech markets, where market shares are evolving very quickly, it seems unlikely that companies would take such a risk. Disruptive technologies appear abruptly and create new markets, which very often eliminate all possibilities for "locking" the consumer into a market that no longer exists.[104] This example presumes, lastly, that it is better for consumers to have compatible products of lower quality than incompatible products with a higher quality. These different assumptions put together tend to prove the ineffectiveness of this criticism.

As for empirical evidence. Part of the scholarship on this topic notes that the "no economic sense" test excludes empirical evidence on the effects of practices.[105] It seems, conversely, that it allows a fair balance between legal certainty, on the one hand, and the need to consider empirical evidence in order to improve the analysis on the other.[106] If new empirical evidence shows that a practice, previously legal, is in fact having anti-competitive effects, the "no economic sense" test will lead to condemn it. The contrary is true as well. A practice seen as illegal for years may become permissible if new economic evidence is adduced by the company.

C. How to Improve the "No Economic Sense" Test

We have shown that the "no economic sense" test is particularly efficient for analyzing non-price strategies such as predatory innovation. And yet, as explained, applying the test as it was originally designed implies a trade-off: creating some type-II errors in exchange for legal certainty. Although this could be defended, this article intends to demonstrate how this trade-off may be avoided by applying an improved version of the "no economic sense" test, which would maintain legal certainty while avoiding any type of legal errors.

The "no economic sense" test might be improved, but it is important not to create a new version that would have high implementation costs. While keeping this objective in mind, we propose an "enhanced version of the 'no economic sense' test," which answers criticisms related to the underinclusivity of the test and potential difficulties with applying the test when pro and anti-competitive modifications coexist.[107] Two situations may thus be distinguished,

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[103] Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 589–90 (1986).

[104] Gönenç Gürkaynak et al., *Antitrust on the Internet: A Comparative Assessment of Competition Law Enforcement in the Internet Realm*, 14 BUS. L. INT'L 51, 78 (2013).

[105] William J. Kolasky, Jr., Reinvigorating Antitrust Enforcement in the United States: A Proposal, 22 ANTITRUST 85, 89 (2008).

[106] Jacobson & Sher, *supra* note 25, at 785.

[107] The test may be used to protect consumers while protecting competition through innovation. This is the objective assigned by John McGaraghan to antitrust law: "By

one in which product changes are separable from one another and one in which the changes cannot be isolated.

When the changes may be separated from each other. Unlike innovations in the traditional sectors of the economy, innovations developed in high-tech markets often have the advantage of being readable[108] to the extent that it is possible to analyze each line of the source code.[109] Whether innovations introduced in high-tech sectors intend to create a new software structure, to add new features to a product, to facilitate product use, or to increase its security, most of these objectives are achieved by the means of one or more lines of code.[110] The purpose of each of these lines is clearly identifiable.[111]

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changing the focus, the courts can provide more meaningful protection for consumers by protecting competition through innovation." *See* John McGaraghan, *A Modern Analytical Framework for Monopolization in Innovative Markets for Products with Network Effects*, 30 HASTINGS COMM. & ENT. L.J. 179, 200-01 (2007).

[108] Michael J. Madison, *Law as Design: Objects Concepts and Digital Things*, 56 CASE W. RES. L. REV. 381, 396 (2005). One author notes the differences between the "source code" and "object code," the first being set by humans while the second refers to the processing of data by the computer. *See* John M. Newman, *Anticompetitive Product Design in the New Economy*, 39 FLA. ST. U. L. REV. 681, 695 (2012); *see also* Greene, *supra* note 24, at 85 (2015) ("If one can establish that the conduct at issue can be isolated to a portion of the redesign that is functionally separable from other segments of the redesign, a court may narrow its focus accordingly. In so doing, an innovation-based defense would then require the defendant to demonstrate the existence and size of the innovation associated with the component, rather than rely on innovation that characterizes the redesign as a whole.").

[109] "In computing, source code is any collection of computer instructions, possibly with comments, written using a human-readable programming language, usually as plain text. The source code of a program is specially designed to facilitate the work of computer programmers, who specify the actions to be performed by a computer mostly by writing source code. The source code is often transformed by an assembler or compiler into binary machine code understood by the computer. The machine code might then be stored for execution at a later time. Alternatively, source code may be interpreted and thus immediately executed." *See* Wikipedia, *Source code*, https://en.wikipedia.org/wiki/Source_code.

[110] According to Wikibooks, coding is "the process of designing, writing, testing, debugging / troubleshooting, and maintaining the source code of computer programs." *See* Wikibooks, *Introduction to Software Engineering/Implementation*, https://en.wikibooks.org/wiki/Introduction_to_Software_Engineering/Implementation.

[111] As it was underlined by Greene, *supra* note 24, at 85 ("In some cases a question arises as to the scope of the redesign at issue. More specifically, is the redesign more appropriately analyzed as a bundle of relatively unrelated innovations, or should it be analyzed as an integrated whole?"); *see also* Newman, *supra* note 108, at 712-714 ("Since the elements and functionality of a software update are relatively easily conceived of as separate from the elements of the base software program affected by the update, courts are more competent to address their effects on competition than the same courts would be in the stereotypical product-design case . . . [A]lleged innovative justifications are much more capable of judicial scrutiny in code-based product markets than in traditional, physical product markets.").

The software (or product) as a whole is thus distinguished from each of the features that can be adjusted individually.[112] It may also be distinguishable from its updates if the introduction of new software always benefits to the consumer,[113] some of its updates may play against its interest. Accordingly, some authors have raised[114] the point that predatory innovation is more easily identifiable on high-tech markets than others.[115]

Consequently, the "no economic sense" test may be improved by identifying the purpose of every update of a product, and more specifically, each element of the update. Litigious situations where pro and anti-competitive effects are recorded simultaneously tend to disappear to the extent that each of these effects may be separated from the others. As a result, applying the "no economic sense" test is even more relevant. It is not for the judge to interfere with the company's management and/or express disapproval with the strategic choices so to punish companies for not having implemented "*less anti-competitive*"[116] practices. Rather, the judge is tasked with punishing actors that implement practices that could have been implemented without harming the consumers' well-being.

Applying the enhanced version of the "no economic sense" test will have the following structure: in the first instance, the complainant will have to establish the injury he suffered, and in response, the defendant will try to justify each of the changes made to the product. The judge will guarantee the proper conduct of this analysis and will identify all product modifications that have a solely anti-competitive effect. This role is crucial. Consider the situation where a company decides to eliminate its products' compatibility with those of its competitors. Imagine that the dominant firm is justifying this change by

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[112] Newman, *supra* note 108, at 712 ("And as a result, even if a software update contains multiple design changes, the lines of code that dictate functions within the update are separable, allowing direct analysis of what those respective functions are.").

[113] On the *per se* legality when introducing a new product, *see* Werden, *supra* note 31, at 414 (noting that conduct such as introducing a new product should not be subjected to any test for legality for such conduct can derive significant consumer benefits).

[114] Newman, *supra* note 108, at 711 ("[S]ections of code perform specific functions and are separable from surrounding sections, again facilitating the ability of courts to discern between exclusionary and innovative design elements.").

[115] *See* Jay Dratler, *Microsoft as an Antitrust Target: IBM in Software?*, 25 SW. U. L. REV. 671, 698 (1996) (underlining the difficulty of analyzing the practices other than those whose sole effect is reducing competition).

[116] *See Communication from the Commission – Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings*, COM (2009) 45 final (Feb. 24, 2009) (showing that the European Commission uses the term "less anti-competitive").

showing that the new version of its product allows geo-location. In this example, the company has an economic justification—adding a new function to its product—but because it is unrelated to the removal of compatibility, doing so is anti-competitive and should be condemned. The judge then has the responsibility to reject all economic justifications made in bad faith. When doing so, he ensures that companies cannot escape liability, as they might under the traditional "no economic sense" test, by presenting "*ghost*" justifications[117] unrelated to their practices.

Rules for eligibility of evidence in these inquiries can be inspired from the *Daubert* criteria,[118] which fit in line with the work of Karl Popper.[119] In its famous ruling, the Supreme Court held that pursuant to Rule 702 of the Federal Rules of Evidence governing expert testimony, only those using recognized "scientific method[s]" are to be taken into account. The court admitted the need to "filter" the scientific evidence produced in court. A similar filter should be implemented when applying the "no economic sense" test to invalid economic justifications, evidence or, expert reports that do not have a scientific value but have the sole purpose of obscuring the procedure.

When the changes are indivisible. Although the changes made to a technological product are generally separable from each other, that is not always the case. Let us imagine a situation in which a dominant firm decides to remove the compatibility of its products with the specific aim of increasing their safety. It would be possible to track what changes in the coding led to elimination of product compatibility. However, if the economic justification provided by the company—namely increasing products' safety—is directly linked to the compatibility removal, the practice will be considered pro-competitive.[120] In this situation, a single line of code is added (or removed) to delete product compatibility, but it produces two consequences that cannot be separated. Imagine an alternative situation in which a company decides to increase the execution speed of its software by using Wi-Fi rather than Bluetooth. In addition, suppose that, for security purposes, all compatible devices use Bluetooth rather than Wi-Fi. Once again, the judge could easily track which lines of code have enabled the addition of new functionality, on the one hand, and the removal of product compatibility with Bluetooth on the other. Yet, the practice must be deemed pro-competitive because increasing the speed of the product is a valid economic justification caused by replacing the Bluetooth

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[117] Werden, *supra* note 27, at 305.

[118] Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579 (1993).

[119] Karl R. Popper, Conjectures and Refutations: The Growth of Scientific Knowledge (1962).

[120] If this was not the case, this would entrust the judge to interfere with companies' decision-making, which we have previously rejected.

functionality. In this case, even though several lines of code are modified, they cannot be analyzed separately.

Accordingly, the judge must (1) ensure that only valid economic justifications are brought by the parties and (2) determine which modifications may be separated from each other.[121] These two steps are the keystones of a decision process free of judicial errors. This reasoning seeks to encourage investments in the short term and allow continued sophistication of antitrust law by better matching business justifications. In order words, it is about creating the smallest safe harbor possible—when practices cannot be separated—so that antitrust law is effective. It allows, at the same time, a drastic increase in the level of legal certainty by providing an understandable legal framework.

D. Modeling of the Proposed Test

The enhanced version of the "no economic sense" test is comprised of four steps. Together, the steps ensure a legal analysis that detects predatory practices as precisely as possible.

- Step 1: Does the practice implemented by the dominant company tend to reduce or eliminate competition? If the answer is negative, the practice is deemed to be legal. If the answer is positive, the analysis moves on the second step.

- Step 2: Does the practice provide a benefit to the dominant firm solely because of its tendency to reduce or eliminate competition?[122] If the

[121] David A. Heiner, *Assessing Tying Claims in the Context of Software Integration: A Suggested Framework for Applying the Rule of Reason Analysis*, 72 U. CHI. L. REV. 123, 144 (2005); see also United States v. Microsoft Corp., 253 F.3d 34, 87 (D.C. Cir. 2001) (the court admits that "bundling can also capitalize on certain economies of scope. A possible example is the 'shared' library files that perform OS and browser functions with the very same lines of code and thus may save drive space from the clutter of redundant routines and memory when consumers use both the OS and browser simultaneously").

[122] It should be noted that several decisions dealing with predatory innovation have insisted on the fact that the dominant firm had maintained the old version of the product on the market, alongside with the new one. They have concluded, accordingly, that related practices were not to be condemned. The enhanced version of the "no economic sense" test does not take direct account of the existence of these two offers but it should be emphasized that the maintenance on the market of the product version as it existed before the various changes tends to show that the company intended to improve its product. Companies are hoping for consumers to buy the newest version because it is better, but they remain free not to do so. In short, the presence of the old and the new version does not constitute a proof in itself of the pro-competitive nature of the modifications made to the product, but it presumes a good-will that the courts will have to investigate before ruling. In addition, it should be noted that the "no economic sense" test takes place in two steps, the first being the

answer is positive, the practice must be condemned. If the answer is negative, the analysis moves on the third step.

- Step 3: If the judge suspects that some of the effects created by the practice are pro and anti-competitive, he must determine whether it is possible to distinguish between the modifications made to the product and their economic justifications. If the answer is negative, the practice is deemed to be legal as a whole. If the answer is positive, the analysis moves on the last step.

- Step 4: Modifications that make economic sense for reasons that are not anti-competitive must be allowed, while modifications that only tend to reduce or eliminate competition must be condemned. The penalties should be proportional to the intensity/number of anti-competitive practices.

This test, by avoiding judicial errors, ensures short-term efficiency by raising the level of legal certainty for companies while eliminating practices that, without any doubt, are predatory. Moreover, allowing courts to analyze practices related to product modifications will have long-term effect of improving their expertise. Finally, it must be noted that some practices deemed to be legal will be proved to be anti-competitive in a near future. The opposite is true as well.

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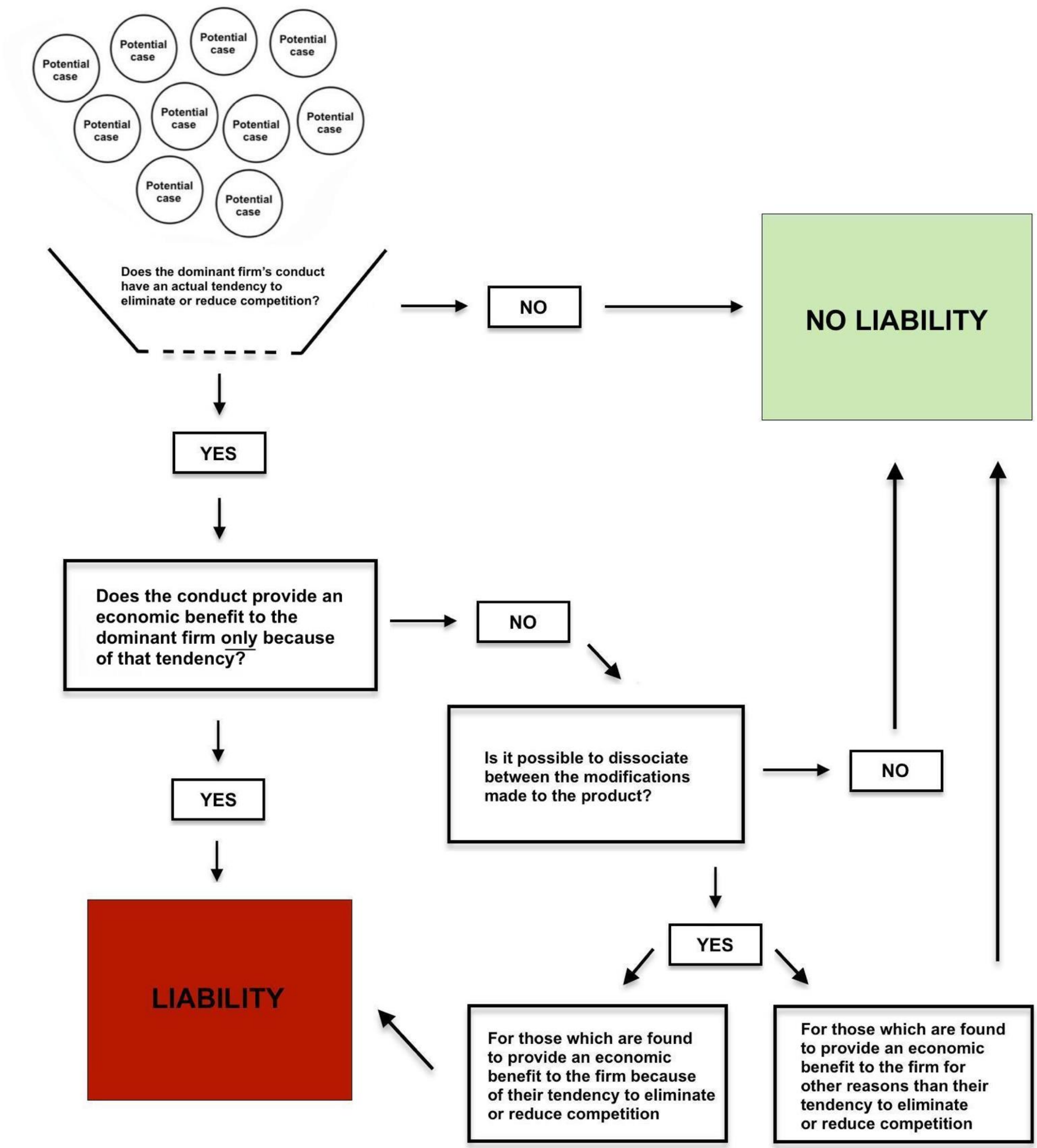
demonstration of the anti-competitive nature of the practice which will be complicated to show if the old version of the product still is on the market.

This graphical representation summarizes the 4 steps detailed beforehand.[123]



[123] Available in a wide format at the following address: https://perma.cc/97A2-4Q2L.

II

APPLICATION TO MAJOR PREDATORY INNOVATION CASES

Now that the enhanced version of the "no economic sense" test has been explained, it will be applied to the major cases dealing with predatory innovation so as to demonstrate its efficiency. The same methodology is used for each case. We begin with a brief summary of the facts, then we explain the test applied by the court and the court's decision.[124] We then apply the new test to the facts and discuss alternatives to the courts' conclusions.[125]

A. The Berkey Photo v. Eastman Kodak case (1979)[126]

Facts. In the late 1960s, Kodak dominated the cameras and compatible products markets. In 1972, the company decided to introduce a new system, the "110 Instamatic," as well as a new device, the "Kodacolor II film." The new device was smaller and simpler to use than the previous ones. It was also incompatible with the products of one of its competitors in an ancillary market. Berkey brought suit against Kodak for having illegally removed the compatibility of its products.

The test applied by the court. The Second Circuit applied a "reasonableness" test[127] and centered its analysis on the fact that a single improvement could justify all modifications made to the product.

The solution. First, the Second Circuit held that an "innovation" may be prohibited by antitrust law if it is proved to be anti-competitive.[128] The court then noted that the new camera introduced by Kodak, the Kodacolor II film, had several lower quality features than its former model. In particular, the Court found that its autonomy was shorter[129] and that it generated more "red eye" in photos. The new device, however, had a better grain[130] and was smaller. The judges then held that comparing the features of the two devices was not a probative element given the different characteristics of the two, which were

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[124] *See* European Commission Press Release IP/10/1006, Antitrust: Commission Initiates Formal Investigation against IBM in Two Cases of Suspected Abuse of Dominant Market Position (Jul. 26, 2010).

[125] This is the first step of the reasoning. See the graphical representation above for further information. We presume, for each of these cases, that the practices had an actual tendency to eliminate or reduce competition.

[126] Berkey Photo v. Eastman Kodak, 603 F.2d 263 (2d Cir. 1979).

[127] *Id.* at 302.

[128] *Id.* at 284.

[129] *Id.* at 278.

[130] *Id.*

performing better in different areas.[131] The Court held that Kodak was not liable.[132]

Application of the enhanced version of "no economic sense" test. The Court's holding justified a set of practices on the ground that one of them was pro-competitive.[133] But, as we have discussed, whenever it is possible to distinguish between the modifications made to a product and their justifications, the judge must condemn the anti-competitive ones. In the present case, Kodak—which initially asked for a *per se* legality to be applied—argued that the few improvements made to its product justified all the modifications, including those that may have anti-competitive aspects.[134] Berkey argued, on the contrary, that Kodak had introduced a less efficient camera for the sole reason that it would no longer be compatible with Berkey products, which justified holding them liable.[135] The Court found that even though some of the new features of the Kodacolor II were inferior to those of Kodacolor X, they did not translate into anti-competitive strategies in themselves because they could have reduced the attractiveness of the new camera to consumers without directly affecting competition. Berkey's argument based on the characteristics of the Kodacolor II film was accordingly deficient.[136] In addition, Berkey failed to prove that Kodak could have marketed a smaller camera while improving all characteristics of the earlier version. Nevertheless, one must ask whether removing the new camera compatibility with Berkey's products was a necessity in order to achieve its goal. In the present case, because Kodak did not demonstrate the causal link between the new design of its device and the need to remove it, it arguably could have been held liable.

Applying the enhanced version of the "no economic sense" test would have resulted in a different outcome from the one found by the Second Circuit. Kodak could have been held liable for having removed the compatibility of its new camera—if it was an anti-competitive strategy, which the Court did not address. Legal certainty would have been enhanced by a court decision that provides clarity and predictability to all companies on the market, which would, in turn, minimize impeding innovation by a type-II error. Not to mention, it would have also benefited consumers.

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[131] *Id.* at 289.

[132] *Id.* at 285.

[133] *See* Daniel J. Gifford, *The Damaging Impact of the Eastman Kodak Precedent Upon Product Competition: Antitrust Law in Need of Correction*, 72 WASH. U. L. REV. 1507, 1535 (1994) (the author contends that the ruling did not provide enough legal certainty).

[134] *See Eastman Kodak*, 603 F.2d at 286.

[135] *Id.* at 294.

[136] *Id.* at 286.

B. The North American Microsoft case (2001)[137]

The approach adopted by European and North American courts regarding predatory innovation practices differ on several points. Notably, European judges extend the essential facilities doctrine to high-tech markets while North American courts refuse to do.[138] The *Microsoft* case illustrates this fundamental distinction. This case also remains one of the pillars of predatory innovation doctrine. It is, in fact, the first case in which a court studies software encoding in such detail.[139]

Facts. The *Microsoft* case was the subject of a long series of jurisprudence, which ended in June 2001 (with “*Microsoft III*”) with a decision of the United States Court of Appeals for the District of Columbia.[140] One of the practices considered[141] was the way Microsoft integrated Internet Explorer into its operating system. In doing so, the company:

- deleted the function allowing one to remove the software from the operating system (practice n°1);
- designed the operating system in order to override the user’s choice to use a different browser (practice n°2);
- designed the operating system so that when certain files related to Internet Explorer were removed, bugs appeared (practice n°3).

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[137] United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001).

[138] Daniel J. Gifford, *The European Union, the United States, and Microsoft: A Comparative Review of Antitrust*, CLEA 2009 Annual Meeting Paper (2009).

[139] George L. Priest, *Rethinking Antitrust Law in an Age of Network Industries*, CTR. FOR STUDIES IN L., ECON. & PUB. POL., n. 352 (2007); *see also* Toshiaki Takigawa, *A Comparative Analysis of US, EU, and Japanese Microsoft Cases: How to Regulate Exclusionary Conduct by Dominant Firm in a Network Industry*, 50 ANTITRUST BULL. 237 (2005).

[140] *Microsoft* remains the most important US decision—outside of the Supreme Court’s decisions—in terms of antitrust law. In addition, over 200 private actions followed. *See* ANDREW I. GAVIL & HARRY FIRST, THE MICROSOFT ANTITRUST CASES: COMPETITION POLICY FOR THE TWENTY-FIRST CENTURY 133 (2014) (“In the wake of the governments’ cases against Microsoft, the firm faced more than 200 civil actions by private parties alleging they were injured by its conduct”); *see also* Keith N. Hylton, *Microsoft’s Antirust Travails*, THE ANTITRUST SOURCE 3 (2014) (reviewing ANDREW I. GAVIL & HARRY FIRST, THE MICROSOFT ANTITRUST CASES: COMPETITION POLICY FOR THE TWENTY-FIRST CENTURY (2014)); *see also* Keith N. Hylton, *Microsoft's Antitrust Travails*, THE ANTITRUST SOURCE 3 (2014).

[141] It was alleged that Windows was trying to eliminate competition through contractual and technical means. The former falls outside predatory innovation contrary to the latter, which is part of it.

The plaintiffs stressed that Microsoft had set up several anti-competitive practices to eliminate Netscape, which was a browser that provided some basic functions similar to that of an operating system.[142] Moreover, the complainants denounced the fact that Microsoft had developed a Java script incompatible with Sun Microsystem's products.[143]

The test applied by the court. This decision is one of the first related to high-tech markets to have considered the balancing test,[144] even though the court did not apply it. The burden of proof was initially on the plaintiff to demonstrate the anti-competitive effects of the practices.[145] The defendant then had to demonstrate that the pro-competitive effects prevail over anti-competitive ones.[146] In theory, if the defendant did so, the plaintiff then had to prove that the defendant was incorrect. This balancing theoretically ended once a party showed conclusively that the dominant effects were pro or anti-competitive. In the present case, even though the court was "very skeptical about claims that competition has been harmed by a dominant firm's product design changes,"[147] it opined that applying a *per se* legality to such practices was inappropriate because they may have various effects on competition.[148]

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[142] *See* WILLIAM H. PAGE & JOHN E. LOPATKA, THE MICROSOFT CASE: ANTITRUST, HIGH TECHNOLOGY, AND CONSUMER WELFARE (2007) (suggesting that the challenge was to develop a browser that allows to run applications and software regardless of the operating system).

[143] *See* Wikipedia, *Java (programming language)*, https://en.wikipedia.org/wiki/Java_(programming_language) ("Java is a general-purpose computer-programming language that is concurrent, class-based, object oriented, and specifically designed to have as few implementation dependence as possible . . . compiled Java code can run on all platforms that support Java without the need for recompilation . . . Java was originally developed by James Gosling at Sun Microsystems . . . and released in 1995 as a core component of Sun Microsystem's Java platform"); *see also* United States v. Microsoft Corp., 253 F.3d 34, 137 (DC Cir. 2001).

[144] Heiner, *supra* note 121, at 123 ("In the United States, the D.C. Circuit has held that the rule of reason governs the legality of alleged tying arrangements involving platform software.").

[145] *Microsoft*, 253 F.3d at 65.

[146] *Id.*

[147] *Id.*; *see also* Alan Devlin & Michael Jacobs, *Anticompetitive Innovation and the Quality of Invention*, 27 BERKELEY TECH. L. J. 1, 15 (2012) ("Beyond putting the initial burden of proof on the plaintiff – an allocation common to all civil cases – the D.C. Circuit's test created an analytic framework equally conducive to findings of legality and illegality").

[148] *Microsoft*, 253 F.3d at 65.

The solution regarding Internet Explorer.[149] The Court held that practices n°1 and n°3 were illegal.[150] On the other hand, it found that the practice n°2 was pro-competitive. The court ruled that the "technical reasons" provided by Microsoft were exculpatory considering that the plaintiffs failed to demonstrate a greater anti-competitive effect.[151] The Court also ruled that a company's technical justifications may not be sufficient to establish the legality of a practice. This implies that a genuine technical innovation may be considered anti-competitive if it causes great damage to the competitive process. This reasoning was not applied in this case because the plaintiffs failed to demonstrate any anti-competitive effect,[152] but it did challenge the claim that antitrust law protects innovation.[153] The consequences in terms of disruptive innovation are particularly dangerous because they create a destructive effect on existing markets. In short, a sole pro-competitive effect was proven in practice n°2, but only anti-competitive effects were argued for practices n°1 and n°3. As a consequence, the judges did not conduct a balancing of any of the effects[154] and the decision does not illustrate the practical application of the balancing test.[155]

The solution regarding Java. The plaintiffs also challenged the practices implemented by Microsoft in the development of Java for Windows. They complained, in particular, that Windows Java was incompatible with Sun Microsystems' products.[156] Windows, in opposition, argued that its own Java should be allowed because of its superiority to Sun's Java.[157] The Court found that a company's dominant position does not prohibit it from developing products that are incompatible with those of its competitors,[158] and thus, the

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[149] *See* Renata B. Hesse, *Section 2 Remedies and US v. Microsoft: What is to be Learned?*, 75 ANTITRUST L. J. 847, 868 (2009) (noting that the original proposal to split Microsoft into two companies has created high expectations in terms of sanctions).

[150] *Microsoft*, 253 F.3d at 67.

[151] *Id.*

[152] *Id*. at Section II.B.

[153] *See* Hovenkamp, *supra* note 16.

[154] *See* Devlin & Jacobs, *supra* note 147, at 14*; see also* GAVIL & FIRST, *supra* note 140, at 184 (stressing that "[i]n the end, it is difficult to assess the costs and benefits of these cases, both for the parties and, more broadly, for the institutions charged with deciding them—the federal and state courts.").

[155] *See* Alan Devlin & Michael Jacobs, *The Empty Promise of Behavioral Antitrust*, 37 HARV. J. L. & PUB. POL'Y 1009 (2014) (pointing out that balancing properly between the pro and anti-competitive effects would have anyway been impossible).

[156] *Microsoft*, 253 F.3d at 34, 74-75.

[157] *Id*. at 76.

[158] *Id*. at 75.

court justified Microsoft Java's incompatibility with Sun because of its greater power and speed.[159]

Application of the enhanced version of "no economic sense" test. The *Microsoft* decision suffers from numerous flaws that would have been eliminated by applying the enhanced version of the "no economic sense" test.[160] According to the information available in the decision, Microsoft gave no pro-competitive justification for practices n°1 and n°3.[161] It is unclear whether Microsoft gave justifications that were rejected earlier in the procedure, but in the absence of any, these practices made sense solely because of their tendency to reduce or eliminate competition. A fine should have then been imposed.

Practice n°2 was justified by Microsoft on the grounds that using Netscape's browser prevented the use of the "ActiveX" which allowed the proper functioning of "Windows 98 Help" and "Windows Update."[162] Microsoft also justified the forced use of Internet Explorer by explaining that when the user started Internet Explorer from "My Computer" or "Windows Explorer," a different browser would not have enabled them to keep the same window.[163] Surprisingly, the court did not analyze the way Windows operated in more detail. Indeed, if it had been shown that the use of ActiveX was prevented when using another browser because of Microsoft's anti-competitive desire, or, in other words, that Microsoft could have allowed Active X even with another browser, the company's technical justification would have been nullified. Similarly, if it had been shown that another browser would have created the same ease of use with "My Computer" and "Windows Explorer," the holding that only Internet Explorer could do it would have been refuted. In the absence of additional information, it is impossible to say whether the practice implemented by Microsoft was pro or anti-competitive. The lack of conviction in this case tends to minimize the poor reasoning led by judges, but a more detailed decision would have increased legal certainty, and ultimately would have promoted innovation.

Regarding the practices related to Java, the Court found that because Microsoft's Java was more powerful than Sun's, its design was *de facto* justified.[164] The dominance Microsoft enjoyed at the time did not create any

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[159] *Id.*

[160] Thomas A. Piraino, Jr., *A Proposed Approach to Antitrust High Technology Competition*, 44 WM. & MARY L. REV. 65, 104 (2002).

[161] *Id.* at 113.

[162] *Microsoft*, 253 F.3d at 67.

[163] *Id.*

[164] *Id.* at 75.

duty to design compatible products with its competitors. It should be emphasized, however, that a different outcome would probably have been reached in the European system because of the principle of "special responsibility" for dominant firms. In any event, the application of the enhanced version of the "no economic sense" test would have resulted in an acquittal on behalf of practice n°2. The application of that test would have also increased legal certainty by providing businesses a more comprehensive grid of analysis than the enigmatic one given by the Court.

C. The European Microsoft Case (2004)[165]

The *Microsoft* case, along with the *Google* case,[166] remains to this day the most iconic case in terms of abuse of dominant position. In addition to its importance regarding penalties, it is the first decision in which the Commission found that network effects could be used to strengthen the barriers to entry in high-tech markets.[167] Unlike the North American decision, the European Commission did not analyze the way[168] Microsoft integrated its software (here a media player) into its operating system. The North American judges condemned the company because the integration of Internet Explorer came along with micro-practices possessing anti-competitive effects that were distinguishable from the integration. The European decision, in contrast, disputed the integration of Windows Media Player in itself.[169]

Facts. On December 10, 1998, Sun filed a complaint against Microsoft on the grounds that Microsoft had refused to provide information allowing for the interoperability of Sun's products with Microsoft's PC.[170] In February 2000, the European Commission launched an investigation against Microsoft.[171] A second statement of objections against Microsoft involved interoperability and the integration of Windows Media Player within its operating system.[172] And yet

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[165] *See generally Microsoft* Decision, *supra* note 8*; see also* DANIEL J. GIFFORD & ROBERT KUDRLE, THE ATLANTIC DIVIDE IN ANTITRUST: AN EXAMINATION OF US AND EU COMPETITION POLICY 15 (2015) (explaining that the *Microsoft* case is the perfect illustration of the differences in antitrust law on the two sides of the Atlantic).

[166] *See* European Commission Press Release IP/17/784, Antitrust: Commission fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to own Comparison Shopping Service (June 27, 2017).

[167] *See* PAGE & LOPATKA, *supra* note 142 (emphasizing that the Microsoft case is the epitome of the Post-Chicago school).

[168] *Microsoft*, 253 F.3d at 65.

[169] *Microsoft* Decision, *supra* note 8, para. 5, at 5.

[170] *Id*. para. 3, at 5.

[171] *Id.*

[172] *Id.*

another statement of objections was sent to Microsoft in 2003 following a market survey.[173]

The test applied by the court. Above all else, it should be underscored that the European Commission rejected Microsoft's argument that antitrust law could not be applied to the New Economy.[174] The Commission pointed out that "the specific characteristics of the market in question (for example, network effects and the applications barrier to entry) would rather suggest that there is an increased likelihood of positions of entrenched market power, compared to certain 'traditional industries'," and required a strict application of antitrust law.[175]

In fact, the European Commission seemed to apply a similar test to the one used by the North American Federal Court, but it is difficult to say if the Commission applied a "balancing" or a "disproportionality" test[176] given that the term "proportionality" does not appear in the decision.[177] But the similarities stop here. The North American and European procedures did not use the same semantic field[178] and practically showed a will to reach different outcomes. The European Commission multiplied the references to "the prejudice of consumers,"[179] "network effects,"[180] and "interoperability,"[181] while the Department of Justice reported the "predatory"[182] nature of the practices and the need to protect "innovation."[183] The European Commission indirectly intended to ensure consumer protection by enabling products interoperability while the Department of Justice developed a broader view through a defense of

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173 *Id.* para. 10, at 7.

174 *Id.* para. 470, at 129; *see also New Economy*, INVESTOPEDIA, http://www.investopedia.com/terms/n/neweconomy.asp ("New economy is a buzzword describing new, high growth industries that are on the cutting edge of technology").

175 *Microsoft* Decision, *supra* note 8, para. 5, at 5.

176 One author underlined that the test applied by European judges in the Microsoft case is directly deducted from the *Jefferson Parish* test. *See* Daniel J. Gifford, *The European Union, the United States, and Microsoft: A Comparative Review of Antitrust*, CLEA 2009 Annual Meeting Paper, 29 (2009).

177 The term "proportionality" is absent from the European Commission's decision.

178 *See* Thibault Schrepel, *The Microsoft Case By The Numbers: Comparison Between US and EU*, REVUE CONCURRENTIALSTE (February 10, 2014), https://leconcurrentialiste.com/2014/02/10/the-microsoft-case-by-the-numbers-comparison-between-u-s-and-e-u (providing a statistical study on the subject).

179 *Microsoft* Decision, *supra* note 8, para. 693, at 186.

180 *See, e.g., id*. para. 422, at 117; *id*. para. 622, at 167; *id.* para. 946, at 260.

181 *See, e.g., id*. paras. 30-32, at 11; *id*. paras. 32-34, at 12; *id*. para. 1064, 294.

182 United States v. Microsoft Corp., 253 F.3d 34, 68 (D.C. Cir. 2001).

183 *Id.* at 89.

innovation that aimed not to create type-I errors.[184] Most of the European Commission's decision is devoted to the rules of "tying,"[185] which highlights the amalgam between this notion and the one of predatory innovation.[186] It also shows why "tying" does not cover all of the issues related to predatory innovation.[187] The Commission found that Microsoft had not put forward any efficiency gain that would justify the integration of its Windows Media Player into the operating system.[188] It held, however, that anti-competitive effects may have outweighed efficiency, at least in theory.[189]

The solution. The European Commission sanctioned Microsoft for numerous antitrust violations, which were confirmed by the General Court.[190] In analyzing Microsoft's integration of the Windows Media Player ("WMP") into its operating system, the Commission began by observing that there were no technical means to uninstall the player.[191] This observation led the Commission to analyze whether the interdependence of Windows Media Player with the operating system was necessary, thereby avoiding one of the main pitfalls of the American decision.[192] Microsoft replied, "if WMP were removed, other parts of the operating system and third party products that rely on WMP would not function properly, or at all."[193] Here, Microsoft intended to prove the absence of predatory innovation, which deserved to be discussed. Unfortunately, the European Commission did not answer the argument.

In fact, the European Commission did not seem to address this issue because it was described under the broader label of tying. Instead of addressing the issue, the judges were almost exclusively concerned by the fact that Microsoft did not market a version of Windows without Windows Media Player.[194] But the practice in question concerned the functionality of the

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[184] In terms of philosophy, the European decision is closer to the consumer protection theories while the North American decision is related to growth-based theories. *See generally Microsoft* Decision, *supra* note 8; *see also United States v. Microsoft Corp*., 253 F.3d.

[185] *Microsoft* Decision, *supra* note 8, paras. 792-799, at 209-211.

[186] *See generally Legal Recognition*, *supra* note 4, at 40 (describing the similarity in function and aim of rules directed at tying and rules directed at predatory innovation).

[187] *Id*. at 40-43 (emphasizing that tying is inadequate framework to address software-related issues in antitrust).

[188] *Microsoft* Decision, *supra* note 8, para. 970, at 269.

[189] *Id.*

[190] Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-3601.

[191] *Microsoft* Decision, *supra* note 8, para. 829, at 219.

[192] *Id.* para. 1027, at 284.

[193] *Id.* para. 829, at 219.

[194] *See, e.g.*, Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-3601, para. 1149.

operating system. And the notion of tying was unfit to be applied because there was a technical reason to combine the products into one.[195]

Here lies one major criticism[196] one can make regarding European Commission decision: by refusing to analyze the issue of predatory innovation, the Commission deprived its decision of a legal basis for examining all of the anti-competitive effects identified by the complainant. The European Commission also noted that "it can be left open whether it would have been possible to follow Microsoft's above line of argumentation had Microsoft demonstrated that tying of WMP was an indispensable condition for simplifying the work of applications developers."[197] It was added that "Microsoft has failed to supply evidence that tying of WMP is indispensable for the alleged pro-competitive effects to come into effect,"[198] thus concluding that it was "technically possible for Microsoft to have Windows handle the absence of multimedia capabilities caused by code removal (and the resulting effect on any interdependencies) in a way that does not lead to the breakdown of operating system functionality."[199] In this respect, the Commission held that Microsoft had not provided tangible evidence to support their argument that the integration of Windows Media Player simplified the work of application designers.[200] Conversely, the Commission did not underline a discussion regarding whether the integration of Windows Media Player to the operating system had allowed a more complete experience of Windows. Nevertheless, it concluded "it is appropriate to differentiate between technical dependencies which would by definition lead to the non-functioning of the operating system and functional dependencies which can be dealt with 'gracefully.'"[201] In other words, Microsoft could have kept the other functions of the operating system but all functions directly or indirectly related to the use of such a player would have been inoperable without it or another player.[202] The distinction between technical and functional interoperability held by the European Commission is, in fact, essential. It indicates a difference between the interoperability necessary to the

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[195] Some authors noted that "very early in the case Microsoft built upon that commentary to argue that its "integration" strategy shouldn't even be analyzed as tying[.]" *See* GAVIL & FIRST, *supra* note 140, at 316.

[196] The European ruling in the *Microsoft* case is opposed to the more-economic based approach to antitrust law. *See* Christian Ahlborn & David S. Evans, *The Microsoft Judgment and Its Implications for Competition Policy Towards Dominant Firms in Europe*, 75 ANTITRUST L.J. 887, 889 (2009).

[197] *Microsoft* Decision, *supra* note 8, para. 963, at 267.

[198] *Id.*

[199] *Id*. para. 1028, at 284-285.

[200] *Id.*

[201] *Id.* para. 1033, at 287.

[202] *Id.*

functioning of a product on the one hand and allowing a new feature to work properly on the other.

The Commission imposed a €497 million fine on Microsoft for its practices.[203] In a press release related to the United States' investigation of the same matter, the Department of Justice called the sizable fine regrettable, especially because unilateral competitive conduct is "the most ambiguous and controversial area of antitrust" law.[204] The Commission also required Microsoft to sell a version of its operating system free of its Windows Media Player.[205] Lastly, the Commission ordered the company to disclose information that it had refused to previously provide for the development of products compatible with its own.[206]

Application of the enhanced version of "no economic sense" test. To the extent that the integration of Windows Media Player had strong pro-competitive effects—such as providing cost and time savings to consumers—applying the proposed test would have necessarily led to not condemning Microsoft. The *Microsoft* decision is therefore a type-I error. It would have been helpful for the Commission to analyze the anti-competitive aspects separate from pro-competitive aspects, but the Commission did not, demonstrating how European courts and authorities deal improperly with predatory innovation.[207] Analyzed correctly, the enhanced version of the "no economic sense" test shows that it was not possible to dissociate the integration of Windows Media Player from enhanced consumer well-being. Forcing the consumer to download another media player carried a direct injury to the consumer *in itself*. Further, Windows Media Player was not exclusive. In other words, the integration of WMP made economic sense to Microsoft not only because of the potential anti-competitive

[203] It being specified that the penalty was decreased by 50% to reflect the duration of the infringement. *Id*. para. 1078, at 297 (the Commission noted that duration and gravity of Microsoft's antitrust infringement led to a 50% increase in the standard fine, resulting in the reported number).

[204] Dep't of Justice, Assistant Attorney General for Antitrust, R. Hewitt Pate, Issues Statement on The EC's Decision In Its Microsoft Investigation, at 2 (March 24, 2004), https://www.justice.gov/archive/atr/public/press_releases/2004/202976.htm.

[205] For a critical view on the sanction, see Keith N. Hylton, *Remedies, Antitrust Law and Microsoft: Comment on Shapiro*, 75 ANTITRUST L.J. 773, 786 (2009). Only a single manufacturer has chosen to offer for sale the version that excluded Windows Media Player, and had no success doing so. This shows, in this regard, the failure of the sanction imposed by the judges. *See* William H. Page, *Mandatory Contracting Remedies in the American and European Microsoft Cases*, 75 ANTITRUST L.J. 787, 799 (2009); *see also* Ahlborn & Evans, *supra* note 196, at 922.

[206] *Microsoft* Decision, *supra* note 8, para. 999, at 277.

[207] *See generally Legal Recognition*, *supra* note 4 (describing the difficulties European and United States courts have especially had with separating anti and pro-competitive effects of software innovation).

effects, but also because it improved the user experience. Accordingly, the European Commission made a critical error by holding a real innovation anti-competitive. The fact is that it is not for judges to order functions' removal if they benefit consumers. In such a world, the door is open for competition authorities to prevent all innovations producing a low anti-competitive effect despite having great pro-competitive effects.

D. The iPod iTunes Litigation

The *iPod iTunes Litigation* is the most recent case to have drawn a great deal of attention to a practice of predatory innovation. It is particularly important because it took place several years after the *Microsoft* and *Intel* cases, both of which had been influential for analyzing practices in the high-tech sector.[208] Yet, to the best of our knowledge, the *iPod iTunes Litigation* has never been examined closely.

Facts. On November 10, 2001, Apple introduced its portable music player, called the iPod.[209] One of its competitors, RealNetworks, analyzed the iPod's software and managed to extract the code created by Apple for listening to downloaded files on the iPod. RealNetworks inserted this code in all MP3s sold in the RealNetworks Music Store. In 2001, Apple introduced iTunes, free software allowing users to manage audio files on the iPod. On April 28, 2003, Apple also introduced the iTunes Music Store ("iTMS"), an online store enabling direct music purchase.[210] Apple managed to modify the format of the regular audio files purchased on the iTMS by introducing a digital rights management ("DRM") to restrict the use of regular AAC ("Advanced Audio Coding") files.[211] This format was referred as "AAC Protected" and iTunes used a feature called FairPlay, which allowed Apple to manage this DRM. Apple also changed the iPod internal software so as to allow the proper reading of these

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[208] For an in-depth background on the effects and developments immediately following the *Microsoft* cases, *see* Marina Lao, *Reclaiming a Role for Intent Evidence in Monopolization Analysis*, 54 Am. U. L. Rev. 151 (2004).

[209] *Apple Presents iPod, Ultra-Portable MP3 Music Player Puts 1,000 Songs in Your Pocket*, APPLE (Oct 23, 2001), https://www.apple.com/newsroom/2001/10/23Apple-Presents-iPod [https://perma.cc/B7ER-2USA]; *Apple's iPod Available in Stores Tomorrow*, APPLE (Nov. 9, 2001), https://www.apple.com/newsroom/2001/11/09Apple-s-iPod-Available-in-Stores-Tomorrow/.

[210] *See In re* Apple iPod iTunes Antitrust Litigation, 796 F. Supp. 2d 1137, 1139-40 (N.D. Cal. 2011); *Apple Launches the iTunes Music Store*, APPLE (April 28, 2003), https://www.apple.com/newsroom/2003/04/28Apple-Launches-the-iTunes-Music-Store/.

[211] Newman, *supra* note 108, at 699.

"AAC Protected" files.[212] In July 2004, RealNetworks introduced the new version of its RealPlayer. It included a feature called Harmony that sought to imitate FairPlay compatibility and enable audio files purchased from the RealNetworks online store to be played on the iPod. In October 2014, Apple decided to release the version 4.7 of iTunes.[213] This version changed the FairPlay encryption method, removing any compatibility between Harmony and iTunes.[214] RealNetworks then restored this compatibility.[215]

A first complaint was introduced on January 3, 2005, denouncing the anti-competitive strategy implemented by Apple in order to eliminate competition on the online market for selling music.[216] On February 28, 2005, the plaintiffs also denounced the modification made by Apple of a free audio format, the AAC, into a protected audio format, the "AAC Protected." They underlined Apple's intention to exclude competitors from the market through an anti-competitive strategy[217]—predatory innovation. The applicants pointed out that the audio files purchased from the iTMS became incompatible with other audio players. Also, any files purchased from a store other than iTMS became incompatible with the iPod. Lastly, the complainants alleged that Apple was unlawfully tying by requiring the purchase of an iPod in order to listen to the files bought on the iTMS and by forcing users to purchase songs on the iTMS in order to be able to use the iPod.[218] On March 7, 2005, Apple responded to the complaint pointing out, in the company's opinion, the inaccuracy of the complainants' allegations.[219] Apple stressed that listening to the files bought on

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212 *Apple iPod iTunes Antitrust*, 796 F. Supp. 2d at 1140; *see generally* Amended Complaint - Second Amended Class Action Complaint at 2, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Aug. 28, 2006).

213 *Apple iPod iTunes Antitrust*, 796 F. Supp. 2d at 1140.

214 *Id.*

215 *See id.*

216 *See* Amended Complaint - Second Amended Class Action Complaint at 2-3, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Aug. 28, 2006).

217 *See* Memorandum in Opposition to Defendant's Motion to Dismiss Class Action at 3-5, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Feb. 28, 2005).

218 *See Apple iPod iTunes Antitrust*, 796 F. Supp. 2d at 1141; *see also* Memorandum of Points and Authorities in Support of Plaintiffs' Opposition to Defendant's Motion to Dismiss Counts IV and VII of The Second Amended Complaint at 12, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 30, 2006). (Apple summarized the arguments from the complaint as: "[t]hey allege that Apple changed the ACC format to the AAC Protected format not for any technological benefit, but to exclude competing portable hard-drive digital music player from playing iTMS songs. They also allege that Apple again changed its format once RealNetworks began selling iTMS compatible files for play on the iPod so that RealNetworks would be locked out").

219 *See* Response in Support of Its Motion to Dismiss Class Action Complaint filed by Apple Computer, Inc. at 1, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Mar. 7, 2005).

the iTMS using other music players remained possible by "burning" them into a CD-ROM and then by extracting the files from the CD on a computer to delete the protection.[220] As for tying, Apple underlined that a practice may not be condemned as such if, by buying the two products separately, it would be so expensive that no consumer would do so.[221] In September 2006, Apple released version 7.0 of iTunes, which, aside from introducing new features, once again deleted iTunes' compatibility with Harmony.[222]

The test applied by the court regarding iTunes 4.7. Following a long process, the United States District Court for the Northern District of California was in charge of determining the legality of iTunes 4.7. Quoting *Allied v. Tyco*, the judges pointed out that the District Court has ruled that "there is not a *per se* rule barring Section 2 liability on patented product innovation."[223] They also held that balancing the pro and anti-competitive effects of a new product was rejected in *Allied*.[224] The judges applied the same reasoning, holding that when a real improvement is shown, antitrust law should not condemn the modification.[225]

The solution found by the court regarding iTunes 4.7. Apple argued that the introduction of this new version of iTunes was motivated by the necessity to improve its security through the strengthening of anti-piracy protections.[226] Apple stressed, in particular, that (1) the earlier version of the software had previously been pirated, (2) that the proliferation of computer attacks that occurred at the beginning of 2004 led some music labels to require Apple to take corrective action, and, (3) that they changed the encryption method in accordance with the contractual provisions sent by music labels.[227] RealNetworks underlined that Apple's true intention was to remove the

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[220] Apple used this argument from the beginning of the proceedings. *See, e.g.*, NOTICE by Mariana Rosen re 965 Administrative Motion to File Under Seal Notice of Filing Public Documents Regarding Plaintiffs Opposition to Apple Inc.'s Motion, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 7, 2014).

[221] *See Apple iPod iTunes Antitrust*, 796 F. Supp. 2d at 1141.

[222] *Id.* at 1140. Part of the North American doctrine particularly underlined that the high-tech markets for new technologies allowed the dominant undertaking to compensate for losses arousing from the implementation of an anti-competitive practice expensive faster than in other markets. *See* Newman, *supra* 108, at 703-4.

[223] Allied Orthopedic Appliances, Inc. v. Tyco Health Care Grp., 592 F.3d 991 (9th Cir. 2010).

[224] *Id.*

[225] *Id.*; *see also In re* Apple iPod iTunes Antitrust Litigation, 796 F. Supp. 2d 1137.

[226] *Id.*

[227] *Id.*

compatibility with the audio files purchased from its online store.[228] RealNetworks also stressed that Apple began developing a new FairPlay a month after it refused to grant RealNetworks a license, proving Apple's anti-competitive intention. RealNetworks said it had concluded numerous deals with music labels, which threatened Apple's position on the market for selling online music.[229] The company also emphasized how it had increased its market shares after launching Harmony, whereas Apple's market share had, for the first time, dropped below 70%.[230] RealNetworks lastly argued that Apple showed its anti-competitive intention by threatening to remove any compatibility with Harmony.[231]

The Court ultimately rejected RealNetworks' arguments. The court ruled that the introduction of iTunes 4.7 was a real improvement that could not be condemned. In particular, they emphasized that the expert appointed by RealNetworks reported himself that the new version of FairPlay was indeed harder to hack, significantly increasing its safety.[232] The court also underlined that no other practices implemented by Apple could have been challenged under antitrust law.[233] This precision is particularly interesting because it seems to recognize the possibility of dissociating the various technical changes made by Apple, on one side, and the pro-competitive modification related to FairPlay security, on the other. But in fact, the Court merely analyzed whether Apple had breached antitrust law, without examining the technical aspects of the product in too much detail. This decision, thus, did not apply the enhanced version of the "no economic sense" test.

Application of the enhanced version of "no economic sense" test regarding iTunes 4.7. The court held that the practice implemented by Apple had the effect of reducing competition in the market for online music sales.[234] Yet, it is necessary to consider the possibility of distinguishing the improvement in terms of FairPlay's safety from the eventual anti-competitive effects, namely, the removal of compatibility. Unfortunately, it is not possible to process this analysis as relevant expert testimonies are still covered by business confidentiality.[235] Accordingly, the merits of the decision adopted by the Northern District of California cannot be denied nor confirmed.

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[228] *Id.*
[229] *Id.*
[230] *Id.*
[231] *Id.*
[232] *Id.*
[233] *Id.*
[234] *Id.*
[235] *See, e.g.*, Order on Administrative Motion to File Under Seal Declaration of David F. Martin in Support of Plaintiff's Opposition to Apple's Motion for Summary Judgment, Apple

The litigation regarding iTunes 7.0[236] is of the same nature, though more complex. It occurred based on the fact that, in 2006, Apple introduced iTunes 7.0. Complainants highlighted similar problems to the 4.7 version.

The test applied by the court regarding iTunes 7.0. A jury was asked to evaluate the modifications made to iTunes 7.0.[237] The process that led to the question asked to the jury is to be analyzed carefully because its formulation significantly influenced the final outcome. Two points of disagreement arose between the parties. The first was related to the possibility of separating the practices from one another. The second concerned taking into account subjective intent, because even though the practices were seen as an indivisible whole, they could have been considered anti-competitive.

Regarding the modifications' separability. In a November 18, 2014 document, which was jointly submitted by the two parties in order to define the legal issues, Apple's counsel crystallized the case around the following questioning: was iTunes 7.0 a real improvement?[238] Apple's counsel sought to apply the test set out in *Allied Orthopedic*, according to which if a product is improved, the modifications are deemed to be legal.[239] Accordingly, the new version of a product is either an improvement or a strategy seeking to eliminate

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iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Mar. 17, 2011); Order on Administrative Motion to File Under Seal Declaration of Augustin Farrugia in Support of Defendant's Renewed Motion for Summary Judgment, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Mar. 17, 2011); Administrative Motion to File Under Seal portions of Apple's Renewed Motion for Summary Judgment, and the Declarations of Jeffery Robbin, Augustin Farrugia, John Kelly, and certain exhibits to the Declaration of David Kiernan in support thereof, in accordance with General Order 62, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Jan. 18, 2011).

[236] *See In re* Apple iPod iTunes Antitrust Litigation, No. 05-CV-0037 YGR, 2014 U.S. Dist. LEXIS 165254 (N.D. Cal. Nov. 25, 2014).

[237] Proposed Jury Instructions, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 19, 2014) ("(i) the issue to be tried is whether the issuance and activation of the software and firmware changes in iTunes 7.0 and 7.4 were genuine product improvements and (ii) Apple's conduct with respect to the development of the iPod and its integration with iTunes and the iTunes Store prior to these particular changes is not at issue in this trial and has been held to be legal.")*.*

[238] *Id.*

[239] Letter from William A. Isaacson regarding the appropriate preliminary instruction on the issue of whether the conduct at issue in this case involved a genuine product improvement, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 22, 2014); *see also* Joint Proposed Jury Instructions by Apple, Inc. and Plaintiffs, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 22, 2014).

competition.[240] The plaintiff noted that the way the question was formulated favored Apple.[241] They emphasized that evaluating whether the new version of iTunes included improvements was not sufficient.[242] They underlined, notably, that the changes made to the KeyBag Verification Code ("KVC") and the Database Verification Code ("DVC") should have been brought to the jury's attention as being independent practices.[243] Conversely, Apple argued for these amendments to be considered as a whole along with the iTunes 7.0 improvements.[244] And indeed, Apple stressed that according to *Allied v. Tyco*, all the changes were to be considered as an indivisible whole,[245] and that anyway, the practices could not have been differentiated in practice. Apple also gave two technical justifications for its actions: an increase in security, as well as strengthening against product corruption.[246] Unsurprisingly, in the hearing held on December 1, 2014, plaintiff's counsel argued that they needed to ask the jury separately about the different product modifications.[247] The Court decided mentioning coding issues to the jury would be confusing.[248] All product modifications were then presented as an indivisible whole.[249] In this regard, it should be stressed that avoiding legal errors cannot be done when the essence of the issues are not submitted to the discretion of the courts and juries. Moreover, even by assuming that mentioning coding would have confused the jury, nothing actually prevented the court from analyzing the coding beforehand and then submitting an adapted question to the jury.

Regarding subjective intent. The plaintiffs stressed that according to *Allied Orthopedic*, a company that has improved its product but also voluntarily

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[240] Letter from Bonny E. Sweeney in response to Apple Inc.'s November 22, 2014 Letter to the Court (ECF 919) regarding preliminary instructions on genuine product improvement, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 23, 2014).

[241] Letter from Bonny E. Sweeney, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 7, 2014) ("Apple must defend the claim as asserted and not as reconfigured by Apple into something more easily defended.").

[242] *Id.* ("Instruction on genuine product improvements does not properly reflect the narrow factual issue to be decided by the jury.").

[243] *Id.*; *see also* Letter from Bonny E. Sweeney, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 11, 2014).

[244] Letter from Bonny E. Sweeney, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 11, 2014).

[245] Letter from Karen L. Dunn, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 8, 2014).

[246] *Id.*; *see also* Joint Proposed Jury Instructions by Apple, Inc. and Plaintiffs, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 22, 2014).

[247] Transcript of Proceedings held on December 1, 2014, before Judge Yvonne Gonzalez Rogers, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 8, 2014).

[248] *Id.*

[249] *Id.*

created substantial anti-competitive effects should be condemned.[250] They alleged that the improvements made on iTunes had anti-competitive purposes[251] and asked for the improvements to be balanced with the anti-competitive intent. They suggested that the jury follow a two-stage approach, analyzing whether the improvements were real, and if so, whether Apple had been driven by anti-competitive intent.[252] Apple stressed that the intention did not matter considering the fact that competition by innovation is about harming competitors by introducing a new product.[253] Apple claimed that, as long as some improvements to the product were shown, it could not have been sanctioned regardless of other considerations.[254] The judges took Apple's side, stressing that product improvements were not to be balanced with anti-competitive intent. We subscribe to this analysis.

The solution found by the court regarding iTunes 7.0. The jury was asked the following question: "Were the firmware and software updates in iTunes 7.0, which were contained in stipulated models of iPods, genuine product improvements?"[255] and answered in the positive, saying that the update of iTunes 7.0 was a real improvement, and, therefore, pro-competitive.[256] Because

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[250] Joint Proposed Jury Instructions by Apple, Inc. and Plaintiffs, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 22, 2014).

[251] Proposed Jury Instructions. Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 19, 2014); *see also* Letter from Bonny E. Sweeney in response to Apple Inc.'s November 22, 2014 Letter to the Court (ECF 919) regarding preliminary instructions on genuine product improvement, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 23, 2014) (The complainant raised that, "[i]n short, there is ample legal authority and evidentiary predicate for the Court to instruct the jury that it 'must decide whether the software and firmware changes in iTunes 7.0 and 7.4 were genuine product improvements or not genuine product improvements but evidence of a pretext,' as it indicated it would do at the hearing on November 19, 2014.").

[252] Letter from Bonny E. Sweeney Regarding Proposed Jury Instructions, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 10, 2014).

[253] Joint Proposed Jury Instructions by Apple, Inc. and Plaintiffs, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 22, 2014); *see* Letter from William A. Isaacson regarding the appropriate preliminary statement on the issue of whether the conduct at issue in this case has involved genuine product improvement, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 22, 2014).

[254] Revised Proposed Jury Instructions by Apple, Inc. Nos. 17 and 31, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Nov. 18, 2014).

[255] Jury Verdict, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 16, 2014); *see also* Final Jury Instructions, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 15, 2014).

[256] For one of the only comments of the decision, *see* Laurence Popofsky, *Product Redesign and the Abuse of Dominance: The Apple iPod iTunes Antitrust Litigation*, speech given at the Center for Competition Law & Policy Lecture Series at Pembroke College (May 7, 2015).

of the question's wording, the modifications made to the DVC and KVC codes were not properly analyzed.

Application of the enhanced version of the "No Economic Sense" Test regarding iTunes 7.0. Both claims made by the parties are supported by precedents.[257] In fact, the diversity of the tests chosen by the various jurisdictions throughout the years and the lack of standardization of these tests have had the effect of creating a very unclear jurisprudence, resulting in hard-to-understand litigation. On the merits, Apple's argument, according to which all modifications were indistinguishable, is not convincing. The link between allowing videos to be played on iPods and the need to enhance security is not particularly obvious, but judging whether other changes[258] did necessitate eliminating compatibility should have been performed.[259] Unfortunately, such an analysis may not be conducted in great detail as the expert testimonies are still covered by business confidentiality.[260] Let us simply underline that not analyzing each modification separately raises the possibility that a type-II error was actually pronounced. Unfortunately, the necessary information to conduct a deep analysis is not available.

CONCLUSION

This paper has examined the ENES test from a theoretical and empirical perspective. The main conclusion is that the test would improve the quality of the law for analyzing non-price strategies, which is greatly needed. More than a simple adjustment of the existing rules, it requires a new and standardized approach to these practices.

Conclusions drawn from the test cases. We have shown that the ENES test leans toward the conviction of practices that were deemed to be legal by the

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[257] Joint Pretrial Conference Statement by Apple Inc. and Plaintiffs, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Oct. 14, 2014).

[258] Letter from Karen L. Dunn, Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Dec. 8, 2014).

[259] It should be noted, on this point, that Steve Jobs would have fallen in all likelihood. The introduction of DRM does not prevent the music from being pirated, proving the weakness of one of Apple's justifications. *See* Mike Musgrove, *Jobs Calls for Open Music Sales*, WASH. POST (Feb. 7, 2007), http://www.washingtonpost.com/wp-dyn/content/article/2007/02/06/AR2007020601764.html. The testimony of Steve Jobs, however, was excluded from the procedure.

[260] *See, e.g.*, Order on Administrative Motion to File Under Seal Declaration of Augustin Farrugia in Support of Defendant's Renewed Motion for Summary Judgment by Apple Inc., Apple iPod iTunes Antitrust Litigation, No. C05-00037 (N.D. Cal. Mar. 17, 2011) ("This document is currently Under Seal and not available to the general public."). More than 50 documents of the proceedings are sealed.

courts, like *Berkey Photo v. Eastman Kodak*. It also leads to exonerate Microsoft in the European case, contrary to what was done in the European Commission's ruling. The same goes for CR Bard in its litigation. Lastly, applying this new test results in similar conclusions in four cases, the main difference being only that the ENES test would have greatly increased the level of legal certainty. A table in the appendix illustrates its effectiveness on a wider range of cases.

General contribution. We have demonstrated, in short, how the ENES test results in the creation of a uniform rule of law, which ultimately increases consumer welfare by encouraging companies to keep innovating. Consumer well-being is also improved by the elimination of anti-competitive strategies. As a matter of fact, the proposed test is easier to implement than most other tests, and yet, it limits legal errors more efficiently than others. Its quasi-mathematical aspect leads to a better understanding of the rule of law and it must, therefore, be implemented in all cases related to predatory innovation and other non-price strategies.

Appendix #1 – A reassessment of the major cases related to predatory innovation

A reassessment of the major cases related to predatory innovation					
Name & date of the case	**IBM (1979)**	**Berkey Photo v. Eastman Kodak (1979)**	**CR Bard v. M3 Systems (1998)**	**United States v. Microsoft Corp US (2001)**	**European Commission v. Microsoft Corp EU (2004)**
Outcome found by the court	**No conviction**: The product modification is not "*unreasonably anti-competitive*"	**No conviction:** Comparing the quality of two devices is not a conclusive evidence	**Conviction:** the new product is easier to use, but "*the real reason*" of the modification is anti-competitive	**Conviction**: Deleting the possibility to remove a software from the operating system (practice n°1) and programing the operating system so to bug when certain files related to Internet Explorer are deleted (practice n°3) has no pro-competitive justification **No conviction**: Programing the operating system so to override the consumer choice to use another software than	**Conviction**: The operating system may have properly functioned even in the absence of Windows Media Player

				Internet Explorer (practice n°2) is technically justified by Microsoft **No conviction**: Windows's Java is more efficient than the Sun's Java	
Application of the enhanced version of "no economic sense" test	**No conviction**: The improvements may not be separated from the anti-competitive effects	**Conviction**: Removing compatibility is unrelated from improving the camera	**No conviction**: Improving the needle system may not be done without removing compatibility	**Conviction:** Practices n°1 and n°3 made economic sense only because they produced an anti-competitive effect **Inability to judge:** No information is available on the separability of the improvement with the compatibility removal **No conviction**: Microsoft's Java is better and	**No conviction**: The integration of WMP to the operating system is not anti-competitive in itself

				Microsoft's had no duty whatsoever to ensure the compatibility of new products with those of its competitors	

Name & date of the case	**HDC Medical v. Minntech Corporation (2007)**	**Intel US (2010)**	**Allied c. Tyco (2010)**	**iPod iTunes litigation (2014)**
Outcome found by the court	**No conviction**: Minntech provided an economic justification for its product modification that HDC could not prove to be false	**Mutual agreement:** Intel has agreed to amend its practices for the future	**No conviction:** The new design is an improvement establishing the superiority of the new product	**No conviction:** iTunes 4.7: this version of iTunes is a real innovation in that it increases the security of the software **No conviction:** iTunes 7.0: This version of iTunes is also a real innovation in that it increases the security of the software
Application of the enhanced version of “no economic sense” test	**No conviction:** removing the product compatibility is inseparable from the improvement made to the product	**Inability to judge**: lack of information on the possibility to distinguish between the improvement and the deleting of	**No conviction**: Removing the product compatibility is the reason explaining the improvement	**Inability to judge**: The documents allowing to analyze whether changes made to iTunes 4.7 were justified for technical reasons

		compatibility		are sealed **Inability to judge**: The documents allowing to analyze whether changes made to iTunes 7.0 were justified for technical reasons are sealed

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THINK BIG! THE NEED FOR PATENT RIGHTS IN THE ERA OF BIG DATA AND MACHINE LEARNING

HYUNJONG RYAN JIN

From personalized medical diagnostics to election prediction, recent advancements in machine learning enables unprecedented, powerful applications of big data. Machine learning users can extract insights hidden in massive amounts of data, gaining an indispensable advantage against the competition. Investment in the process of gathering and analyzing data has now become a necessity to maintain a successful enterprise. Yet the difficulty of obtaining software patents since the 2014 Alice decision raises the question whether the current intellectual property framework may adequately protect inventions related to machine learning. This Note explores how we may utilize IP protection to harness the societal benefits we hope to enjoy through the advances in machine learning. The Note discusses the current framework of patent law, copyright, and trade secret in the context of machine learning inventions, and argues that patent rights for computational inventions adequately balances the concern of patent monopoly and promoting innovation. The Note concludes by applying the Alice framework to the proposed computational inventions, and demonstrates that the current patent system may still protect machine learning innovations.

INTRODUCTION

With AlphaGo's triumph over the 9-dan Go professional Lee Sedol in March 2016, Google's DeepMind team conquered the last remaining milestone in board game artificial intelligence.[1] Just nineteen years after IBM Deep Blue's victory over the Russian chess grandmaster Garry Kasparov,[2] Google's success exceeded expert predictions by decades.[3]

AlphaGo demonstrated how machine learning algorithms could enable processing of vast amounts of data. Played out on a 19 by 19 grid, the number of possible configurations on a Go board is astronomical.[4] With near-infinite number of potential moves, conventional brute-force comparison of all possible outcomes is not feasible.[5] To compete with professional level human Go players, the gaming artificial intelligence requires a more sophisticated approach than the algorithms employed for chess—machine learning. The underlying science and implementation of machine learning was described in a Nature article two months prior to AlphaGo's match with Lee. In the article, the Google team described how a method called "deep neural networks" decides between the insurmountable number of possible moves in Go.[6] The AlphaGo model was built by reinforcement learning from a database consisting of over thirty million moves of world-class Go players.[7] This allowed the algorithm to optimize the search space of potential moves, therefore reducing the required calculations to determine the next move.[8] In other words, the algorithm mimics human intuition based on the "experience" it gained from the database "fed" into the algorithm, which drastically increases computational efficiency by eliminating moves not worth subsequent consideration. This allows the algorithm to devote computational resources towards the outcomes of "worthwhile" moves.

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[1] Sang-Hun Choe & John Markoff, *Master of Go Board Game Is Walloped by Google Computer Program*, N.Y. TIMES (March 9, 2016), https://www.nytimes.com/2016/03/10/world/asia/google-alphago-lee-se-dol.html (reporting the shocking defeat of Go Master Lee Se-dol to Google DeepMind's AlphaGo).

[2] Laurence Zuckerman, *Chess Triumph Gives IBM a Shot in the Arm*, N.Y. TIMES (May 12, 1997), http://politics.nytimes.com/library/cyber/week/051297ibm.html (detailing IBM's highly publicized win through Deep Blue's victory over world chess champion Garry Kasparov).

[3] See Choe & Markoff, *supra* note 1.

[4] David Silver et al., *Mastering the game of Go with deep neural networks and tree search*, 529 NATURE 484, 484 (2016).

[5] *Id*.

[6] *Id*.

[7] *Id*. at 485.

[8] *Id*.

The advent of such powerful analytical tools, capable of mimicking human intuition alongside massive computation power, opens endless possibilities—early stage cancer detection[9], accurate weather forecasting,[10] prediction of corporate bankruptcies,[11] natural event detection,[12] and even prediction of elections.[13] For information technology ("IT") corporations, investment in such technology is no longer an option, but a necessity. The question that this Note addresses is whether the current state of intellectual property law is adequate to harness the societal benefits that we hope to enjoy through the advances in machine learning. In particular, are patents necessary in the age of big data? And if they are, how should we apply patent protection in the field of big data and machine learning?

Part I of this Note examines the need for intellectual property rights in machine learning and identifies the methods by which such protection may be achieved. The differences between trade secret, copyright and patent protection in software are discussed, followed by the scope of protection offered by each means. This background provides the basis to discuss the effectiveness of each method in the context of machine learning and big data innovations.

Part II discusses the basics of the underlying engineering principle of machine learning and demonstrates how the different types of intellectual property protection may apply. Innovators may protect their contributions in machine learning by defending three *areas*—(1) the vast amount of data required to train the machine learning algorithm, (2) innovations in the algorithms itself including advanced mathematical models and faster computational methods, and (3) the resulting machine learning model and the output data sets. Likewise, there are three distinct *methods* of protecting these intellectual properties: patents, copyright, and secrecy.[14] This Note discusses the effectiveness of each method of intellectual property protection with three principles of machine learning innovation in mind:

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[9] *See* Andre Esteva et al., *Dermatologist-level classification of skin cancer with deep neural networks*, 542 NATURE 115 (2017).

[10] *See* Sue Ellen Haupt & Branko Kosovic, *Big Data and Machine Learning for Applied Weather Forecasts*, IEEE SYMPOSIUM SERIES ON COMPUTATIONAL INTELLIGENCE (2015).

[11] *See* Wei-Yang Lin et al., *Machine Learning in Financial Crisis Prediction: A Survey,* 42 IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS 421 (2012).

[12] *See* Farzindar Atefeh & Wael Khreich, *A Survey of Techniques for Event Detection in Twitter*, 31 COMPUTATIONAL INTELLIGENCE 132 (February 2015).

[13] *See* Corey Blumenthal, *ECE Illinois Students Accurately Predicted Trump's Victory*, ECE ILLINOIS (Nov. 18, 2016), https://www.ece.illinois.edu/newsroom/article/19754.

[14] For the purpose of this Note, secrecy refers to the use of trade secret and contract based non-disclosure agreements.

facilitating data sharing, avoiding barriers to entry from data network effects, and providing incentives to address the key technological challenges of machine learning. This Notes proposes that patents on computational methods adequately balance the concern of patent monopoly and promoting innovation, hence should be the primary means of intellectual property protection in machine learning.

Part III then visits the legal doctrine of patentable subject matter starting with the United States Supreme Court's *Alice* decision. While *Alice* imposed a high bar for software patents, the post-*Alice* Federal Circuit decisions such as *Enfish*, *Bascom*, and *McRO* suggest that certain types of software inventions are still patentable. Specifically, this section will discuss the modern framework pertinent to subject matter analysis: (1) inventions that are directed to improvements of computer functionality rather than an abstract idea, (2) inventions that contain an inventive concept, and (3) inventions that do not improperly preempt other solutions. The Note will apply this framework to innovations in machine learning.

The Note proposes that patents for computational methods balance the need for intellectual property protection while permitting data sharing, paving the pathway for promoting innovation in machine learning. The Note further argues that machine learning algorithms are within patentable subject matter under 35 U.S.C. §101.

I
NEED FOR INTELLECTUAL PROPERTY RIGHTS IN MACHINE LEARNING

> "*He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.*"
>
> – Thomas Jefferson

> "*I'm going to destroy Android, because it's a stolen product. I'm willing to go thermonuclear war on this. They are scared to death, because they know they are guilty.*"
>
> – Steve Jobs

The two quotes above demonstrate the conflicting views on protecting intangible ideas with intellectual property law. Thomas Jefferson implied that the free circulation of inventive ideas and thoughts would not dampen the progress of innovation nor disadvantage innovators. On the other hand, Steve Jobs exhibited fury over the similarity between the iOS and the Android OS. Why? Was it because his company was worse off due to the similarity between the two products? Would Apple have refrained from inventing the iPhone had it known others would enter the smartphone market?

This section discusses the motives behind the grant of intellectual property rights and whether such protection should be extended to machine learning innovations. Basics of patent law, copyright law, and trade secret are introduced to provide the analytical tools for subsequent discussion on which type of intellectual property protection best promotes the socially-beneficial effects of machine learning.

A. Do We Need Intellectual Property Rights for Machine Learning?

The primary objectives of intellectual property rights are to encourage innovation and to provide the public with the benefits of those innovations.[15] In the context of machine learning, it is not clear whether we need any additional incentives to promote participation in this field. Machine learning is already a "hot field," with countless actors in industry and academia in active pursuit to keep pace.[16] Hence investment incentivizing may not be a valid justification for granting intellectual property rights in machine learning. Rather, such protection is crucial to promote competition and enhance public benefits.

The *quality* of inferences that may be drawn from a given data set increases exponentially as the aggregation diversifies, which is why cross-industry data aggregation will greatly enhance the societal impact of machine learning.[17] Companies will need to identify new data access points outside of their own fields to gain access to other data sets to further diversity their data. Yet the incentive structures of behemoth corporations may not be well-suited to identify and grow

[15] Mark A. Lemley, *The Surprising Virtues of Treating Trade Secrets As IP Rights*, 61 STAN. L. REV. 311, 332 (2008) ("Patent and copyright law do not exist solely to encourage invention, however. A second purpose — some argue the main one — is to ensure that the public receives the benefit of those inventions.").

[16] Andrew Ng et al., *How Artificial Intelligence Will Change Everything*, WALL STREET JOURNAL (March 7, 2017), https://www.wsj.com/articles/how-artificial-intelligence-will-change-everything-1488856320.

[17] Limor Peer, *Mind the Gap in Data Reuse: Sharing Data Is Necessary But Not Sufficient for Future Reuse*, LONDON SCH. ECON. & POLI. SCI. (Mar. 28, 2014) http://blogs.lse.ac.uk/impactofsocialsciences/2014/03/28/mind-the-gap-in-data-reuse ("The idea that the data will be used by unspecified people, in unspecified ways, at unspecified times . . . is thought to have broad benefits").

niche markets.[18] It would be up to the smaller, specialized entities to find the gaps that the larger corporations overlooked and provide specialized services addressing the needs of that market. Protective measures that assist newcomers to compete against resource-rich corporations may provide the essential tools for startups to enter such markets. Sufficient intellectual property protection may serve as leverage that startups may use to gain access to data sets in the hands of the Googles and Apples of the world, thus broadening the range of social benefits from machine learning.

B. The Basics of Patent Law

> "*To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries*"
>
> – United States Constitution, Article I, § 8

The United States Constitution explicitly authorizes Congress to promote useful arts by granting inventors the exclusive rights of their discoveries. Such constitutional rights stems from two distinct bases—(1) a quid pro quo where the government issues a grant of monopoly in exchange for disclosure to society, and (2) property rights of the inventor. The purpose for such rights is explicitly stated in the Constitution—to promote new inventions. The goal is to prevent second arrivers who have not invested in the creation of the initial invention from producing competing products and services at a lower price, undercutting the innovator whose costs are higher for having invested to create the invention. As an incentive for innovators willing to invest in new, useful arts, the patent system provides the innovator rights to exclude others from practicing the invention. Another purpose of such rights is the concept of "mining rights." Akin to the grant of mining rights to the owner in efforts to suppress aggressive mining, the inventor should have the right to define and develop a given field by excluding other people from the frontiers of that knowledge. Considering the importance of industry standards in modern electronics, such a purpose acknowledges the importance of early stage decisions that may define the trajectory of new technological advances.

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[18] *See* Saeed Ahmadiani & Shekoufeh Nikfar, *Challenges of Access to Medicine and The Responsibility of Pharmaceutical Companies: A Legal Perspective*, 24 DARU JOURNAL OF PHARMACEUTICAL SCIENCES 13 (2016) (discussing how "pharmaceutical companies find no incentive to invest on research and development of new medicine specified for a limited population . . .").

C. The Thin Protection on Software Under Copyright Law

The Copyright Act defines a "computer program" as "a set of statements or instructions to be used directly or indirectly in a computer to bring about a certain result."[19] Though it may be counterintuitive to grant copyright protection for "useful arts" covered by patents, Congress has explicitly mandated copyright protection for software.[20] However, as will be discussed below, copyright protection of software has been significantly limited due to case law.

Copyright protects against literal infringement of the text of the program. Source code, code lines that the programmers "author" via computer languages such as C++ and Python, is protected under copyright as literary work.[21] In *Apple v. Franklin Corp*., the Third Circuit Court of Appeals held that object code, which is the product of compiling the source code, is also considered a literary work.[22] Given that compiled code is a "translation" of the source code, this ruling seems to be an obvious extension of copyright protection. Removing the copyright distinction between source code and object code better reflects the nature of computer languages such as Perl, where the source code is not translated into object code but rather is directly fed into the computer for execution. However, the scope of protection on either type of code is very narrow. The copyright system protects the author against literal copying of code lines. This leaves open the opportunity for competitors to avoid infringement by implementing the same algorithm using different text.

Fortunately, in addition to protection against literal copying of code, copyright law may provide some protection of the structure and logical flow of a program. Equivalent to protecting the "plot" of a novel, the Second Circuit Court of Appeals ruled that certain elements of programming structure are considered an expression (copyrightable) rather than idea (not copyrightable), extending copyright protection to non-literal copying.[23] The *Computer Associates International v. Altai* court applied a three-step test to determine whether a computer program infringes other programs—(1) map levels of abstraction of the program; (2) filter out protectable expression from non-protectable ideas; and (3)

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[19] 17 U.S.C. §101 (2012).

[20] *Id*.

[21] 17 U.S.C. §102(a) (Copyright exists "in original works of authorship fixed in any tangible medium of expression . . .").

[22] Apple Comput., Inc. v. Franklin Comput. Corp., 714 F.2d 1240 (3d Cir. 1983).

[23] Comput. Assocs. Int'l v. Altai, 982 F.2d 693 (2d Cir. 1992).

compare which parts of the protected expression are also in the infringing program.[24]

The merger doctrine is applied to step two of the *Altai* test to limit what may be protected under copyright law. Under the merger doctrine, code implemented for efficiency reasons is considered as merged with the underlying idea, hence not copyrightable.[25] Since most algorithms are developed and implemented for efficiency concerns, the *Altai* framework may prevent significant aspects of software algorithms from receiving copyright protection. This means that for algorithms related to computational efficiency, patents may provide significantly more meaningful protection than copyright. The Federal Circuit, in the 2016 case *McRO Inc. v. Bandai Namco Games America Inc*., ruled that patent claims with "focus on a specific means or method that improves the relevant technology" may still be patentable.[26] Although preemption concerns may impede patentability, exemption of patent right by preemption is narrow compared to that of copyright by the merger doctrine.

Scène à faire doctrine establishes yet another limitation on copyright for computer programs. Aspects of the programs that have been dictated by external concerns such as memory limits, industry standards and other requirements are deemed as non-protectable elements.[27] For mobile application software, it is difficult to imagine programs that are not restricted by form factors such as mobile AP computation power, battery concerns, screen size, and RAM limitations. As for machine learning software, the algorithms determine the "worthiness" of computation paths based on conserving computational resources. The external factors that define the very nature and purpose of such machine learning algorithms may exempt them from copyright protection.

D. Comparing Trade Secret and Non-disclosures with Patents

The crucial distinction between trade secret and patent law is secrecy. While patent applicants are required to *disclose* novel ideas to the public in exchange for a government granted monopoly, trade secret requires owners to keep the information *secret*. Though trade secret protection prevents outsiders from acquiring the information by improper means, it does not protect the trade secret against independent development or even reverse engineering of the protected

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[24] *Id.*
[25] *See id*. at 707-09.
[26] 837 F.3d 1299, 1314 (Fed. Cir. 2016).
[27] *Altai*, 982 F.2d at 698.

information. In trade secret doctrine, the existence of prior disclosed art is only relevant for discerning whether the know-how is generally known, a different and simpler analysis than the issue of novelty in patent law.[28]

The United States Supreme Court has specified in *Kewanee Oil* that all matters may be protected under trade secret law, regardless whether it may or may not be patented.[29] The *Kewanee Oil* court predicted that inventors would not resort to trade secret when offered a presumptively stronger protection by patent law:

> The possibility that an inventor who believes his invention meets the standards of patentability will sit back, rely on trade secret law, and after one year of use forfeit any right to patent protection, 35 U.S.C. § 102(b), is remote indeed.[30]

Trade secret is an adequate form of protection for innovators that are concerned with the limits of what may be patentable. The secrecy requirement of trade secret inherently provides protection that may potentially outlive any patent rights, provided a third party does not independently acquire the secret. This coincides with an interesting aspect of machine learning and big data—the need for massive amounts of data. Developers need data to "train" the algorithm, and increase the accuracy of the machine learning models. Companies that have already acquired massive amounts of data may opt to keep their data secret, treating the aggregated data as a trade secret.

In addition to the amount of amassed data, companies have all the more reason to keep their data secret if they have access to meaningful, normalized data. Even if a company amasses an enormous amount of data, the data sets may not be compatible with each other. Data gathered from one source may have different reference points or methodologies that are not immediately compatible with data from another source. This raises the concern of "cleaning" massive amounts of data.[31] Such concerns of data compatibility mean that parties with access to a single, homogenous source of high quality data enjoy a significant advantage over parties that need to pull data from multiple sources.

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[28] *See* Dionne v. Se. Foam Converting & Packaging, Inc., 240 Va. 297 (1990).

[29] Kewanee Oil v. Bicron Corp., 416 U.S. 470 (1974).

[30] *Id.* at 490.

[31] Nikolay Golova & Lars Rönnbäck, *Big Data Normalization For Massively Parallel Processing Databases*, 54 COMPUTER STANDARDS & INTERFACES 86, 87 (2017).

However, data secrecy may not be a suitable strategy for companies that are aiming for cross-industry data aggregation. Institutions such as Global Alliance for Genomics and Health are promoting data sharing between research participants. The Chinese e-commerce giant Alibaba announced a data sharing alliance with companies such as Louis Vuitton and Samsung to fight off counterfeit goods.[32] To facilitate the development of technology and to mitigate risks, various companies and research institutions across diverse fields are engaging in joint development efforts and alliances. Seeking protection under trade secret runs against this trend of engaging in effective cross-industry collaboration. Yet there are countervailing arguments that trade secret promotes disclosure by providing legal remedies that can replace the protection of secrets.[33] Parties can sidestep the limitations of trade secrets by sharing proprietary information under the protection of contract law. While data sharing practices may void trade secret protection, the nature of continued accumulation of data and carefully drafted contractual provisions may provide sufficient protection for the data owners.

II
PLACING MACHINE LEARNING WITHIN INTELLECTUAL PROPERTY LAW

> "*Learning is any process by which a system improves performance from experience.*"
>
> – Herbert Simon, Nobel Prize in Economics 1978.

The concept of machine learning relates to computer programs that have the capability to improve performance based on experience, with limited intervention of the programmer.[34] Machine learning models have the capability to automatically adapt and customize for individual users, discover new patterns and correlations from large databases, and automate tasks that require some intelligence by mimicking human intuition.[35] This section dissects the mechanics of machine learning to identify the aspects of machine learning innovations that are at issue as intellectual property.

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[32] Jon Russell, *Alibaba Teams Up with Samsung, Louis Vuitton and Other Brands to Fight Counterfeit Goods*, TECHCRUNCH (Jan. 16, 2017) https://techcrunch.com/2017/01/16/alibaba-big-data-anti-counterfeiting-alliance.

[33] Lemley, *supra* note 15, at 33

[34] *See* Lior Rokach, *Introduction to Machine Learning*, SLIDESHARE 3 (July 30, 2012), https://www.slideshare.net/liorrokach/introduction-to-machine-learning-13809045.

[35] *Id*. at 4.

A. Machine Learning Basics

Machine learning methods are divided into two different approaches—supervised machine learning and unsupervised machine learning. For supervised machine learning, models are typically established by applying "labeled" sets of data to a learning algorithm. Labeled data refers to data sets that have both relevant features and the target results that the programmer is interested in. For example, we may be interested in developing a machine learning model that classifies images with dogs in them. The data sets for supervised machine learning would indicate whether a given images has dogs or not. The learning process begins with the algorithm fitting trends found in the training data set into different types of models. The algorithm compares the prediction errors of the models by inputting the validation set data into each model, measuring their accuracy. This allows the algorithm to decide which of the various models is best suited as the resulting machine learning model. Finally, the machine learning model is then evaluated by assessing the accuracy of the predictive power of the model. The developed model is then applied to data without a correct answer to test the validity of the model. In unsupervised machine learning, the data sets are "unlabeled" data, which may not contain the result that the programmer is interested in. Returning to our dog image classification example, data sets for unsupervised machine learning will have pictures of various animals that are not labeled—the computer does not know which pictures are associated with dogs. The unsupervised machine learning algorithm develops a model that extracts common elements from the picture, teaching itself the set of features that makes the subject of the picture a dog. In essence, unsupervised machine learning uses data sets that do not have specific labels fed into the algorithm for the purpose of identifying common trends embedded in that data set.

The objective of developing such machine learning models varies. Sometimes the goal is to develop a prediction model that can forecast a variable from a data set. Classification, which assigns records to a predefined group, is also a key application of the algorithm. Clustering refers to splitting records into distinct groups based on the similarity within such group. Association learning identifies the relationship between features.

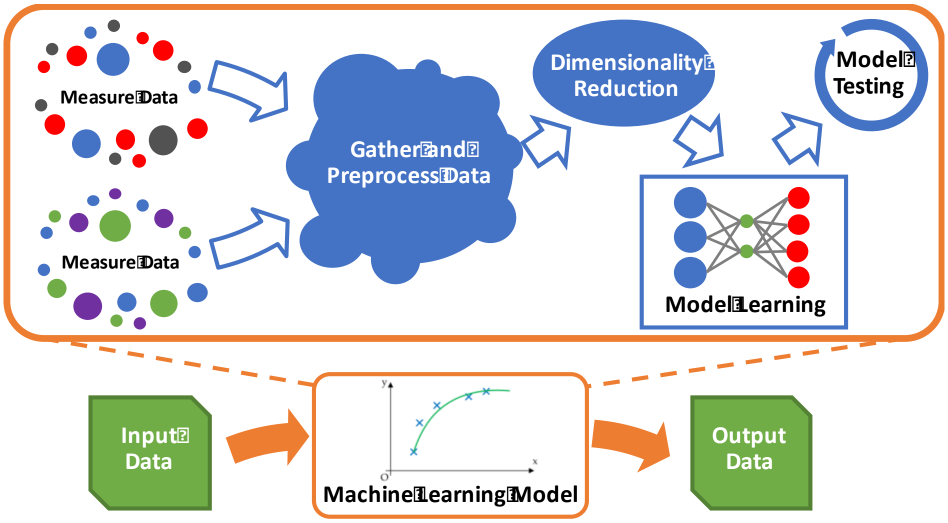

Figure 1. Overview of Machine Learning Model Development

Figure 1 illustrates the overall process of machine learning model development. The learning process of machine learning algorithms begins with aggregation of data. The data originates from an array of diverse sources ranging from user input, sensor measurement, or monitoring of user behavior.[36] The data sets are then preprocessed. The quality of data presents a challenge in improving machine learning models—any data that has been manually entered contains the possibility of error and bias.[37] Even if the data is collected through automatic means, such as health monitoring systems or direct tracking of user actions, the data sets require preprocessing to account for systematic errors associated with the recording device or method.[38] This includes data skews due to difference between individual sensors, errors in the recording or transmission of data, and incorrect metadata about the sensor.[39] Simply put, the data sets may have differing reference points, embedded biases, or differing formats. The "cleaning" process accommodates for the data skews.

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[36] *Id*. at 10.

[37] *See* Lars Marius Garshol, *Introduction to Machine Learning*, SLIDESHARE 26 (May 15, 2012) https://www.slideshare.net/larsga/introduction-to-big-datamachine-learning.

[38] *Id*.

[39] *Id*.

The objective of machine learning models is to identify and quantify "features" from a given data set. The term "feature" refers to individually measurable property of an observed variable.[40] From the outset, there may be an extensive list of features that are present in a set of data. It would be computationally expensive to define and quantify each feature, and then to identify the inter-feature relationships, from massive amounts of data. Due to the high demand for the computational power required for processing massive amounts of data, dedication of computational resources to features that are outside the scope of the designer's interest would be a waste of such limited computational capacity.[41] The machine learning algorithm reduces waste of computational resources by applying dimensionality reduction to the pre-processed data sets.[42] The algorithm can identify an optimal subset of features by reducing the dimension and the noise of the data sets.[43] Dimensionality reduction allows the machine learning model to achieve higher level of predictive accuracy, increased speed of learning, and improves the simplicity and comprehensibility of the results.[44] However, the reduction process has limitations—reducing dimensionality inevitably imposes a limit on the amount of insights and information that may be extracted from the data sets. If the machine learning algorithm discerns a certain feature, the model would not be able to draw inferences related to said feature.

Following dimensionality reduction, the machine learning algorithm attempts to fit the data sets into preset models. Typically, three different types of data are fed into the machine learning model—training set, validation set, and test set.[45] The machine learning algorithm "trains" the model by fitting the training set data into various models to evaluate the accuracy of each selection. Then the

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[40] *See* Lei Yu et al., *Dimensionality Reduction for Data Mining – Techniques, Applications and Trends*, BINGHAMTON UNIVERSITY COMPUTER SCIENCE 11, http://www.cs.binghamton.edu/~lyu/SDM07/DR-SDM07.pdf (last visited Feb. 23, 2018).

[41] *Id*.

[42] *See* Rokach, *supra* note 34, at 10.

[43] Yu et al., *supra* note 40.

[44] Laurens van der Maaten et al., *Dimensionality Reduction: A Comparative Review*, TILBURG CENTRE FOR CREATIVE COMPUTING, TiCC TR 2009-005, Oct. 26, 2009, at 1 ("In order to handle such real-world data adequately, its dimensionality needs to be reduced. Dimensionality reduction is the transformation of high-dimensional data into a meaningful representation of reduced dimensionality. Ideally, the reduced representation should have a dimensionality that corresponds to the intrinsic dimensionality of the data. The intrinsic dimensionality of data is the minimum number of parameters needed to account for the observed properties of the data").

[45] Andrew Ng, *Nuts and Bolts of Applying Deep Learning (Andrew Ng)*, YOUTUBE (Sept. 27, 2016), https://www.youtube.com/watch?v=F1ka6a13S9I.

validation set is used to estimate error rates of each model when applied to data outside the training set that was used to develop each model. Through this process, the machine learning algorithm selects the model that best describes the characteristics and trends of the target features from the test and validation sets.[46] The test set is then used to calculate the generalized prediction error, which is reported to the end user for proper assessment of the predictive power of the model.[47] Simply put, the training test and validation set is used to develop and select a model that reflects the trends of the given data set, and the test set is used to generate a report on the accuracy of the selected model.

The crucial elements in developing a machine learning model are (1) training data, (2) inventions related to the machine learning algorithm such as the method of preprocessing the training data, the method of dimensional reduction, feature extraction, and the method of model learning/testing, and (3) the machine learning model and output data.[48] An ancillary element associated with the three elements above is the human talent that is required to implement such innovation.[49] Innovators in the field of machine learning may protect their investments by protecting one or more of the elements listed above.

The difference between training data and output data, as well as the difference between the machine learning algorithm and the machine learning model, are best illustrated with an example. Let us assume a credit card company wants to use machine learning to determine whether the company should grant a premium credit card to a customer. Let us further assume that the company would prefer to grant this card to customers that would be profitable to the company while filtering out applicants that are likely to file for bankruptcy. Data sets about prior applicant information would correspond to *training data*. The company would apply a mathematical method of extracting insight about the correlation between features and the criteria that the company wants to evaluate (e.g., profitable for the firm or likely to file bankruptcy). The mathematical methods are referred as *machine learning algorithms*. The resulting mechanism, such as a scoring system, that determines the eligibility of card membership is the *machine*

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[46] Andrew Ng, *Model Selection and Train/Validation/Test Sets*, MACHINE LEARNING, https://www.coursera.org/learn/machine-learning/lecture/QGKbr/model-selection-and-train-validation-test-sets (last visited Feb. 23, 2018).

[47] *Id.*

[48] *See* Rokach, *supra* note 34, at 10.

[49] Alex Rampell & Vijay Pande, *a16z Podcast: Data Network Effects*, ANDREESEN HOROWITZ (Mar. 8, 2016), http://a16z.com/2016/03/08/data-network-effects/.

learning model. The credit card applicant's personal data would be the *input data* for the machine learning model, and the *output data* would include information such as expected profitability of this applicant and likelihood of bankruptcy for this applicant.

B. Industry Trends in Machine Learning

Discussing incentive structures and trends behind the machine learning industry is essential in identifying adequate methods of intellectual property rights. The current trends in the world of machine learning will predict what intellectual property regime is most useful to companies to protect their work.

The United States has chronically struggled to maintain adequate supply of talent in the high-tech industry, a deficit of talent that continues in the field of machine learning.[50] From a report by the McKinsey Global Institute, the United States' demand for talent in deep learning "could be 50 to 60 percent greater than its projected supply by 2018."[51] Coupled with the dearth of machine learning specialists, the short employment tenure of software companies further complicates the search for talent. Software engineers from companies such as Amazon and Google have reported an average employment tenure of one year.[52] While some parts of the high attrition rate may be attributed to cultural aspects of the so-called "Gen Y" employees, the "hot" demand for programming talent has significant impact on the short employee tenure.[53] Job mobility within the software industry is likely to increase as the "talent war" for data scientist intensifies. Employee mobility and California's prohibition against "covenants not to compete" have been accredited as a key factor behind the success of Silicon Valley.[54] Another trend in the field is the rapid advances in machine learning methods. Due to the

[50] James Manyika et. al., *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, MCKINSEY GLOBAL INST., May 2011, at 11, *available at* https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Big%20data%20The%20next%20frontier%20for%20innovation/MGI_big_data_exec_summary.ashx.

[51] *Id.*

[52] Leonid Bershidsky, *Why Are Google Employees So Disloyal?*, BLOOMBERG (July 13, 2013, 11:41 AM), https://www.bloomberg.com/view/articles/2013-07-29/why-are-google-employees-so-disloyal-.

[53] *Id.*

[54] Rob Valletta, *On the Move: California Employment Law and High-Tech Development*, FEDERAL RESERVE BANK OF S.F. (Aug. 16, 2002), http://www.frbsf.org/economic-research/publications/economic-letter/2002/august/on-the-move-california-employment-law-and-high-tech-development/#subhead1.

fast-paced development of the field, data scientists and practitioners have every reason to work with companies that would allow them to work at the cutting edge of machine learning, using the best data sets. This may influence the attrition rates and recruiting practices of the software industry mentioned above.[55] Eagerness of employees to publish scientific articles and contribute to the general machine learning committee may be another factor of concern.

To accelerate innovation by repurposing big data for uses different from the original purpose, and to form common standards for machine learning, more industries are joining alliances and collaborations.[56] Cross-industry collaborations may enable endless possibilities. Imagine the inferences that may be drawn by applying machine learning methods to dietary data from home appliances, biometric data, and data on the weather patterns around the user. Putting privacy nightmares aside, machine learning with diverse data sets may unlock applications that were not previously possible. More companies are attempting to capitalize on commercial possibilities that data sharing may unlock.[57]

C. Machine Learning Innovators—Protect the Data or Inventions?

Though it may seem intuitive that patent protection may be the best option, innovations in machine learning may not *need* patent protection. Trade secret protection on the data sets may be sufficient to protect the interests of practicing entities while avoiding disclosure of their inventions during the patent prosecution process. Furthermore, numerous software patents have been challenged as unpatentable abstract subject matter under 35 U.S.C. §101 since the *Alice* decision in 2014.[58] Though subsequent decisions provided guidelines for types of software patents that would survive the *Alice* decision, it is not clear how the judiciary will view future machine learning patents. Such issues raise the question about the patentability of machine learning—should we, and can we, resort to patents to protect machine learning inventions?

Following the discussion on the building blocks of machine learning and recent emerging trends in the field, this section discusses the mode and scope of

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[55] *Id.*

[56] *See* Quentin Hardy, *IBM, G.E. and Others Create Big Data Alliance*, N.Y. TIMES (Feb. 15, 2015), https://bits.blogs.nytimes.com/2015/02/17/ibm-g-e-and-others-create-big-data-alliance.

[57] *See, e.g.*, *Finicity and Wells Fargo Ink Data Exchange Deal*, WELLS FARGO (Apr. 4, 2017), https://newsroom.wf.com/press-release/innovation-and-technology/finicity-and-wells-fargo-ink-data-exchange-deal.

[58] Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347 (2014).

protection that current legal system provides for each element pertinent to innovation in machine learning. The possible options for protecting innovations are (1) non-disclosure agreements and trade secret law, (2) patent law, and (3) copyright. The three options for protection may be applied to the three primary areas of innovation—(1) training data, (2) inventions related to computation, data processing, and machine learning algorithms, and (3) machine learning models and output data. This discussion will provide context about the methods of protection for innovations in machine learning by examining the costs and benefits of the various approaches.

1. Protecting the Training Data—Secrecy Works Best

Access to massive amounts of training data is a prime asset for companies in the realm of machine learning. The big data phenomenon, which triggered the surge of interest in machine learning, is predicated on the need for practices to analyze large data resources and the potential advantages from such analysis.[59] Lack of access to a critical mass of training data prevents innovators from making effective use of machine learning algorithms.

Previous studies suggest that companies resent sharing data with each other.[60] Michael Mattioli discusses the hurdles against sharing data and considerations involved with reuse of data in his article *Disclosing Big Data*.[61] Indeed, there may be practical issues that prevent *recipients* of data from engaging in data sharing. Technical challenges in comparing data from different sources, or inherent biases embedded in data sets may be reasons that complicate receiving outside data.[62] Mattioli also questions the adequacy of the current patent and copyright system to promote data sharing and data reuse—information *providers*

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[59] Karen E.C. Levy, *Relational Big Data*, 66 STAN. L. REV. ONLINE 73, 73 n.3 (2013), https://review.law.stanford.edu/wp-content/uploads/sites/3/2013/09/66_StanLRevOnline_73_Levy.pdf (explaining that the big data phenomenon is due to the need of practices to analyze data resources).

[60] Christine L. Borgman, *The Conundrum of Sharing Research Data*, 63 J. AM. SOC'Y FOR INFO. SCI. & TECH. 1059, 1059-60 (2012) (discussing the lack of data sharing across various industries).

[61] *See* Michael Mattioli, *Disclosing Big Data*, 99 MINN. L. REV. 535 (2014).

[62] *See id*. at 545-46 (discussing the technical challenges in merging data from different sources, and issue of subjective judgments that may be infused in the data sets).

may prefer not to disclose any parts of their data due to the rather thin legal protection for databases.[63]

Perhaps this is why secrecy seems to be the primary method of protecting data.[64] The difficulty of reverse engineering to uncover the underlying data sets promotes the reliance on non-disclosure.[65] Compared to the affirmative steps required to maintain trade secret protection if the data is disclosed, complete non-disclosure may be a cost effective method of protecting data.[66] Companies that must share data with external entities may exhibit higher reliance on contract law rather than trade secret law. In absence of contract provisions, it would be a challenge to prove that the trade secret has been acquired by misappropriation of the recipient party.

The "talent war" for data scientists may also motivate companies to keep the training data sets secret. With a shortage of talent to implement machine learning practices and rapid developments in the field, retaining talent is another motivation for protecting against unrestricted access to massive amounts of data. Companies may prefer exclusivity to the data sets that programmers can work with—top talents in machine learning are lured to companies with promises of exclusive opportunities to work with massive amounts of data.[67] The rapid pace of development in this field encourages practitioners to seek opportunities that provide the best resources to develop their skill sets. This approach is effective since a key limitation against exploring new techniques in this field is the lack of access to high quality big data. Overall, secrecy over training data fits well with corporate recruiting strategies to retain the best talents in machine learning.

Non-disclosure and trade secret protection seems to be the best mode of protection. First, despite the additional legal requirements necessary to qualify as trade secrets, trade secret protection fits very well with non-disclosure strategy. On

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[63] *See id.* at 552 (discussing how institutions with industrial secrets may rely on secrecy to protect the big data they have accumulated).

[64] *See id.* at 570 ("[T]he fact that these practices are not self-disclosing (i.e., they cannot be easily reverse-engineered) lends them well to trade secret status, or to mere nondisclosure").

[65] *Id*.

[66] *Id*. at 552.

[67] Patrick Clark, *The World's Top Economists Want to Work for Amazon and Facebook*, BLOOMBERG (June 13, 2016, 10:47 AM), https://www.bloombergquint.com/technology/2016/06/09/the-world-s-top-economists-want-to-work-for-amazon-and-facebook ("If you want to be aware of what interesting questions are out there, you almost have to go and work for one of these companies").

the other hand, patent law is at odds with the principle of non-disclosure. While trade secret law provides companies protection without disclosing information, patent law requires disclosure in exchange for monopolistic rights. Furthermore, neither patent nor copyright provide adequate protection for underlying data. Patent law rewards creative concepts and inventions, not compiled facts themselves. Copyright may protect labeling or distinct ways of compiling information, but does not protect underlying facts. Also, as a practical matter, the difficulty of reverse engineering of machine learning models does not lend well to detecting infringement. Analysis of whether two parties used identical training data would not only be time consuming and costly, but may be fundamentally impossible.

If companies were to seek protection of training data, it would be best to opt for secrecy by non-disclosure. This would mean companies would opt out of the cross-industry collaborations that were illustrated above. This may be less of a concern for innovation, as companies may still exchange output data as means of facilitating cross-industry collaboration.

2. Protecting the Inventions—Patent Rights Prevail

Adequate protection over inventive approaches in processing data is becoming increasingly important as various industries begin to adopt a collaborative alliance approach in machine learning. Cross-industry collaboration requires implementation of methods such as preprocessing diverse data sets for compatibility. As the sheer amount of data increases, more processing power is required. The machine learning algorithm needs to maintain a high degree of dimensionality to accurately identify the correlations between a high number of relevant features. The need for more innovative ideas to address such technological roadblocks will only intensify as we seek more complex applications for machine learning.

The three primary areas where novel ideas would facilitate innovations in machine learning are pre-training data processing, dimensional reduction, and the machine learning algorithm.

Access to massive amounts of data alone is not sufficient to sustain innovation in machine learning. The raw data sets may not be compatible with each other, requiring additional "cleaning" of data prior to machine learning training.[68] The data provided to the machine learning algorithm dictates the result of the machine learning model, hence innovations in methods to merge data with diverse formats is essential to enhancing the accuracy of the models. As cross-industry data analysis becomes more prominent, methods of merging data will have more significant impact on advancing the field of machine learning than mere collection of large data sets. Cross-industry data sharing would be useless unless such data sets are merged in a comparable manner.[69]

Companies can opt to protect their inventive methods by resorting to trade secret law. The difficulty of reverse engineering machine learning inventions, coupled with the difficulty of patenting software methods provides incentives for innovators to keep such inventions secret from the public. However, two factors would render reliance on non-disclosure and trade secret ineffective—frequent turnover of software engineers and rapid speed of development in the field.

Rapid dissemination of information from employment mobility may endanger intellectual property protection based on secrecy. Furthermore, while the law will not protect former employees that reveal trade secrets to their new employers, the aforementioned fluid job market coupled with general dissemination of information make it difficult to distinguish between trade secrets from former employment and general knowledge learned through practice. The difficulties of reverse engineering machine learning models work against the trade secret owner as well in identifying trade secret misappropriation—how do you know others are using your secret invention? The desire for software communities to discuss and share recent developments in the field does not align well with the use of secrecy against innovations in machine learning. Secrecy practices disincentivize young data scientists from joining due to the limits against gaining recognition.[70]

The rapid development of machine learning technology also presents challenges against reliance on trade secret law. Secret methods may be

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[68] BILL FRANKS, TAMING THE BIG DATA TIDAL WAVE 20 (2012) (discussing that the biggest challenge in big data may not be developing tools for data analysis, but rather the processes involved with preparing the data for the analysis).

[69] *See* Borgman, *supra* note 60, at 1070 ("Indeed, the greatest advantages of data sharing may be in the combination of data from multiple sources, compared or "mashed up' in innovative ways." (citing Declan Butler, *Mashups Mix Data Into Global Service*, 439 NATURE 6 (2006))).

[70] Jack Clark, *Apple's Deep Learning Curve*, BLOOMBERG BUSINESSWEEK, (Oct 29, 2015) https://www.bloomberg.com/news/articles/2015-10-29/apple-s-secrecy-hurts-its-ai-software-development.

independently developed by other parties. Neither trade secret law nor non-disclosure agreements protect against independent development of the same underlying invention.[71] Unlike training data, machine learning models, or the output data, there are no practical limitations that impedes competitors from independently inventing new computational methods of machine learning algorithms.

With such a fluid employment market, high degree of dissemination of expertise, and rapid pace of development, patent protection may provide the assurance of intellectual property protection for companies developing inventive methods in machine learning. Discussions on overcoming the barriers of patenting software will be presented in later sections.[72]

3. Protecting the Machine Learning Models and Results—Secrecy Again

The two primary products from applying the machine learning algorithms to the training data are the machine learning model and the accumulation of results produced by inputting data into the machine learning model. The "input data" in this context may refer to individual data that is analyzed by the insights gained from the machine learning model.

In a recent article, Brenda Simon and Ted Sichelman discuss the concerns of granting patent protection for "data-generating patents," which refers to inventions that generate valuable information in their operation or use.[73] Exclusivity based on patent protection may be extended further by trade secret protection over the data that has been generated by the patented invention.[74] Simon and Sichelman argue that the extended monopoly over data may potentially overcompensate inventors since the "additional protection was not contemplated by the patent system[.]"[75] Such expansive rights will cause excessive negative impact on downstream innovation and impose exorbitant deadweight losses.[76] The added protection over the resulting data derails the policy rationale behind the quid pro quo exchange

[71] Kewanee Oil v. Bicron Corp., 416 U.S. 470, 490 (1974).
[72] *See infra* Section III-B.
[73] Brenda Simon & Ted Sichelman, *Data-Generating Patents*, 111 NW. U.L. REV. 377 (2017).
[74] *Id*. at 379.
[75] *Id*. at 414.
[76] *Id*. at 415 ("[B]roader rights have substantial downsides, including hindering potential downstream invention and consumer deadweight losses . . .").

between the patent holder and the public by excluding the patented information from public domain beyond the patent expiration date.[77]

The concerns addressed in data-generating patents also apply to machine learning models and output data. Corporations may obtain patent protection over the machine learning models. Akin to a preference for secrecy for training data, non-disclosure would be the preferred mode of protection for the output data. The combined effect of the two may lead to data network effects where users have strong incentives to continue the use of a given service.[78] The companies that have exclusive rights over the machine learning model and output data gather more training data, increasing the accuracy of their machine learning products. The reinforcement by monopoly over the means of generating data allows few companies to have disproportionately strong dominance over their competitors.[79]

Market dominance by data-generating patents becomes particularly disturbing when the patent on a machine learning model preempts other methods in the application of interest. Trade secret law does not provide protection against independent development. However, if there is only one specific method to obtain the best output data, no other party would be able to create the output data independently. The exclusive rights over the only methods of producing data provides means for the patent holder to monopolize both the patent and the output data.[80] From a policy perspective, the excessive protection does seem troubling. Yet such draconian combinations are less feasible after the recent rulings on patentable subject matter of software, which will be discussed below.[81] Mathematical equations or concepts are likely directed to an "abstract concept," thus will be deemed directed to a patent ineligible subject matter.[82] Furthermore, though recent cases in the Federal Circuit have found precedents where software patents passed the patentable subject matter requirement, those cases expressed limitations against granting patents that would improperly preempt all solutions to a particular problem.[83] The rapid pace of innovation in the field of machine

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[77] *Id*. at 417.

[78] Rampell & Pande, *supra* note 49.

[79] Lina Kahn, *Amazon's Antitrust Paradox,* 126 YALE L.J. 710, 785 (2017) ("Amazon's user reviews, for example, serve as a form of network effect: the more users that have purchased and reviewed items on the platform, the more useful information other users can glean from the site").

[80] Simon & Sichelman, *supra* note 73, at 410.

[81] *See infra* Section III-A.

[82] *Id*.

[83] *See infra* Section III-B.

learning compared to the rather lengthy period required to obtain patents may also dissuade companies from seeking patents. Overall, companies have compelling incentives to rely on non-disclosure and trade secrets to protect their machine learning models instead of seeking patents.

The secrecy concerns regarding training data applies to machine learning models and the output data as well. Non-disclosure would be the preferred route of obtaining protection over the two categories. However, use of non-disclosure or trade secrets to protect machine learning models and output data presents challenges that are not present in the protection of training data. The use of secrecy to protect machine learning models or output data conflicts with recruiting strategies to hire and retain top talent in the machine learning field. The non-disclosure agreements limit the employee's opportunity to gain recognition in the greater machine learning community. In a rapidly developing field where companies are having difficulty hiring talent, potential employees would not look fondly on corporate practices that limit avenues of building a reputation within the industry.[84]

Companies have additional incentives to employ a rather lenient secrecy policy for machine learning models and the output data. They have incentives to try to build coalitions with other companies to monetize on the results. Such cross-industry collaboration may be additional source of income for those companies. The data and know-how that Twitter has about fraudulent accounts within their network may aid financial institutions such as Chase with novel means of preventing wire fraud. The reuse of insights harvested from the large amount of raw training data can become a core product the companies would want to commercialize. Data reuse may have an incredible impact even for applications ancillary to the primary business of the company.

Interesting aspects of disclosing machine learning models and output data are the difficulty of reverse engineering and consistent updates. If the company already has sufficient protection over the training data and/or the computational innovations, competitors will not be able to reverse engineer the machine learning model from the output data. Even with the machine learning model, competitors will not be able to provide updates or refinements to the model without the computational techniques and the sufficient data for training the machine learning

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[84] Jack Clark, *Apple's Deep Learning Curve*, BLOOMBERG BUSINESSWEEK (Oct 29, 2015), https://www.bloomberg.com/news/articles/2015-10-29/apple-s-secrecy-hurts-its-ai-software-development.

algorithm. In certain cases, the result data becomes training data for different applications, which raises concerns of competitors using the result data to compete with the innovator. Yet the output data would contain less features and insights compared to the raw training data that the innovator possesses, and therefore would inherently be at a disadvantage when competing in fields that the innovator has already amassed sufficient training data.

Grant of patents on machine learning models may incentivize companies to build an excessive data network while preempting competitors from entering competition. This may not be feasible in the future, as technological preemption is becoming a factor of consideration in the patentable subject matter doctrine. Companies may use secrecy as an alternative, yet may have less incentives to keep secrecy compared to the protection of training data.

D. Need of Patent Rights for Machine Learning Inventions in the Era of Big Data

The current system, on its surface, does not provide adequate encouragement for data sharing. If anything, companies have strong incentives to avoid disclosure of their training data, machine learning model, and output data.

Despite these concerns, data reuse may enable social impacts and advances that would not be otherwise possible. Previous studies have pointed out that one of the major barriers preventing advances in machine learning is the lack of data sharing between institutions and industries.[85] Data scientists have demonstrated that they were able to predict flu trends with data extracted from Twitter.[86] Foursquare's location database provides Uber with the requisite data to pinpoint the location of users based on venue names instead of addresses.[87] Information about fraudulent Twitter accounts may enable early detection of financial frauds.[88] The possibilities that cross-industry data sharing may bring are endless.

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[85] Peer, *supra* note 17 ("The idea that the data will be used by unspecified people, in unspecified ways, at unspecified times . . . is thought to have broad benefits").

[86] *See* Harshavardhan Achrekar et al., *Predicting Flu Trends using Twitter data*, IEEE CONFERENCE ON COMPUT. COMMC'NS. WORKSHOPS 713 (2011), http://cse.unl.edu/~byrav/INFOCOM2011/workshops/papers/p713-achrekar.pdf.

[87] Jordan Crook, *Uber Taps Foursquare's Places Data So You Never Have to Type an Address Again*, TECHCRUNCH, (May 25, 2016) https://techcrunch.com/2016/05/25/uber-taps-foursquares-places-data-so-you-never-have-to-type-an-address-again/.

[88] *See* Rampell & Pande, *supra* note 49.

To encourage free sharing of data, companies should have a reliable method of protecting their investments in machine learning. At the same time, protection based on non-disclosure of data would defeat of purpose of promoting data sharing. Hence protection over computation methods involved with machine learning maintains the delicate balance between promoting data sharing and protecting innovation.

Protection over inventions in the machine learning algorithm provides one additional merit other than allowing data sharing and avoiding the sort of excessive protection that leads to a competitor-free road and data network effects. It incentivizes innovators to focus on the core technological blocks to the advancement of technology, and encourages disclosure of such know-how to the machine learning community.

Then what are the key obstacles in obtaining patents in machine learning inventions? While there are arguments that the definiteness requirement of patent law is the primary hurdle against patent protection of machine learning models due to reliance on subjective judgment, there is no evidence that the underlying *inventions* driving big data faces the same challenge.[89] Definiteness may be overcome by providing reasonable certainty for those skilled in the art of defining what the scope of the invention is at the time of filing.[90] There is no inherent reason why specific solutions for data cleaning, enhancement of computation efficiency, and similar inventions would be deemed indefinite by nature.

Since the United States Supreme Court invalidated a patent on computer implemented financial transaction methods in the 2014 *Alice* decision, the validity of numerous software and business method patents were challenged under 35 U.S.C. §101.[91] As of June 8th, 2016, federal district courts invalidated 163 of the 247 patents that were considered under patentable subject matter—striking down 66% of challenged patents.[92] The U.S. Court of Appeals for the Federal Circuit invalidated 38 of the 40 cases it heard.[93]

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[89] *See* Mattioli, *supra* note 61, at 554 ("A final limitation on patentability possibly relevant to big data is patent law's requirement of definiteness").

[90] *See* Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120 (2014).

[91] *See* Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347 (2014).

[92] Robert R. Sachs, *Two Years After Alice: A Survey of the Impact of a "Minor Case" (Part 1)*, BILSKI BLOG (June 16, 2016), http://www.bilskiblog.com/blog/2016/06/two-years-after-alice-a-survey-of-the-impact-of-a-minor-case.html.

[93] *Id*.

Arguably, the public benefits more from such high rates of post-issuance invalidity. The public still has access to the disclosures from the patents and patent applications. In reliance on granted patents, companies may have already invested in growing related businesses, catering to the need of consumers. At the same time, the patent holder's monopolistic rights have been shortened as the result of litigation. Effectively, the price that the public pays to inventors in exchange for the benefits of disclosure is reduced.

Yet the high degree of invalidity raises several concerns for the software industry. Smaller entities, lacking market influence and capital, have difficulty competing against established corporations without the monopolistic rights granted through the patent system. Investors become hesitant to infuse capital into startups for fear that invalidity decreases the worth of patents. Reliance on trade secret has its own limitations due to the disclosure dilemma—the inventor needs to disclose the secret to lure inventors, but risks losing secrecy in the process. Copyright law does not provide appropriate protection. The restrictions imposed by the merger doctrine and scènes à faire doctrine constrain copyright protection of software. Though copyright provides an alternative method of protecting literal copying of code, it does little to protect the underlying software algorithms and innovation.

Ultimately, the increase of alliances and collaboration provides incentives for parties to obtain patent rights. Reliance on trade secret or copyright are not suitable methods of protecting their intellectual property. Furthermore, market power or network effects alone cannot sufficiently mitigate the risks involved with operating a business. Patents become even more important for startups since patents provide investors with assurance that in the worst case, the patents may still serve as potential collateral.

III
PATENTABILITY OF MACHINE LEARNING INNOVATIONS IN THE ERA OF BIG DATA

Patentable subject matter continues to be a barrier for patenting innovations in software. Additional doctrines such as enablement, written description, and obviousness are also serious obstacles against obtaining patents, yet such requirements are specific to each claimed invention and the draftsmanship of claims. Subject matter is considered a broader, categorical exclusion of patent rights. This section explores the current landscape of the patentable subject matter doctrine in the software context.

A. *Alice: The Legal Framework of Patentable Subject Matter in Software*

The complexity involved with software, coupled with the relatively broad scope of software patents, has presented challenges in identifying the boundaries of the claims.[94] Many members of the software community detest imposing restrictions on open source material and attest that many key innovations in algorithms are rather abstract.[95] Such hostility against patenting software has raised the question of whether patent rights should be the proper method of protecting innovations in software.

Alice was a case that embodied such opposition to the grant of software patents. The case involved patents on computerized methods for financial trading systems that reduce "settlement risk" when only one party to financial exchange agreement satisfies its obligation.[96] The method proposed the use of a computer system as a third-party intermediary to facilitate the financial obligations between parties.[97] The United States Supreme Court ruled that the two-step test established from *Mayo* governed all patentable subject matter questions.[98] In particular, for the abstract idea context, the Supreme Court established the following two-step framework for patentable subject matter of software inventions:

1. Step one: "[D]etermine whether the claims at issue are *directed to* a patent-ineligible concept. If so, the Court then asks whether the claim's [additional] elements, considered both individually and 'as an ordered combination,' 'transform the nature of the claim' into a patent-eligible *application*."[99]

2. Step two: "[E]xamine the elements of the claim to determine whether it contains an '*inventive concept'* sufficient to 'transform' the claimed abstract idea into a patent-eligible application. A claim that recites an abstract idea must include 'additional features' to ensure that the [claim] is more than a drafting effort designed to monopolized the

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[94] Stephanie E. Toyos, *Alice in Wonderland: Are Patent Trolls Mortally Wounded by Section 101 Uncertainty*, 17 LOY. J. PUB. INT. L. 97,100 (2015).

[95] *Id*.

[96] Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347, 2349 (2014).

[97] *Id*.

[98] *Id*.

[99] *Id*. at 2350 (emphasis added) (citation omitted).

> [abstract idea]" which requires "more than simply stat[ing] the [abstract idea] while adding the words 'apply it.'"[100]

The *Alice* Court found that the patent on financial transaction was "directed to a patent-ineligible concept: the abstract idea of intermediated settlement," and therefore failed step one.[101] Furthermore, the Court ruled that the claims did "no more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer" and did not provide an inventive concept that was sufficient to pass step two.[102]

B. The post-Alice cases from the Federal Circuit

The *Alice* framework was considered as a huge setback for the application of patentable subject matter doctrine to software. It was a broad, categorical exclusion of certain inventions that were deemed "directed to" an abstract idea, natural phenomenon, or law of nature. The biggest misfortune was the lack of guidance in the *Alice* decision on the threshold for such categorical exclusion—we were left without any suggestions on the type of software patents that would be deemed as patentable subject matter.

The recent line of cases in the Federal Circuit provides the software industry with the much-needed clarification on the standards that govern patentability of software inventions. *Enfish v. Microsoft*, decided on March 2016, involved a "model of data for a computer database explaining how the various elements of information are related to one another" for computer databases.[103] In June 2016, the Federal Circuit decided another case on the abstract idea category for patentable subject matter. *Bascom Global v. AT&T Mobility* is on a patent disclosing an internet content filtering system located on a remote internet service provider (ISP) server.[104] Shortly after *Bascom*, the Federal Circuit decided *McRO v. Bandai Namco Games* in September 2016.[105] The case ruled that an automated 3D

[100] *Id*. at 2357 (emphasis added) (alteration in original) (citation omitted).
[101] *Id*. at 2350.
[102] *Id*. at 2351.
[103] Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1330 (Fed. Cir. 2016).
[104] Bascom Glob. Internet Servs. v. AT&T Mobility LLC, 827 F.3d 1341, 1349 (Fed. Cir. 2016).
[105] McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1308 (Fed. Cir. 2016).

animation algorithm that renders graphics in between two target facial expressions is patentable subject matter.[106]

The rulings from the Federal Circuit on the aforementioned three cases provide guidelines along the two-step *Alice* test of patentable subject matter. The software patents in *Enfish* and *McRO* were deemed “directed to” a patent eligible subject matter, informing the public of what may pass the first set of the *Alice* test. *Bascom* failed the first step.[107] Yet the court ruled that those patents had inventive concepts sufficient to transform a patent ineligible subject matter into a patent eligible application. Combined together, the three cases give more certainty in what may pass the 35 U.S.C. §101 patentable subject matter inquiry.

Reiterating the *Alice* test, whether an invention is a patentable subject matter is determined by a two-step process—(1) is the invention *directed to*, rather than an application of, an abstract idea, natural phenomenon, or law of nature, and even if so, (2) do the elements of the claim, both individually and combined, contain an *inventive concept* that transforms this invention into a patent-eligible application? The Federal Circuit fills in the gaps that were left unexplained from the *Alice* ruling.

1. The Federal Circuit’s Standard for Alice Step One

The *Enfish* court discussed what constitutes an abstract idea at the first step of the *Alice* inquiry. Judge Hughes instructs us to look at whether the claims are directed to a specific improvement rather than an abstract idea. In this case, the patent provides the public with a solution to an existing problem by a specific, non-generic improvement to computer functionality. The *Enfish* court ruled that such invention is patent eligible subject matter.[108]

McRO also ruled that the facial graphic rendering for 3D animation was not an abstract concept. Here, the Federal Circuit again emphasized that a patent may pass step one of the *Alice* test if the claims of the patent “focus on a specific means or method that improves the relevant technology.”[109] The *McRO* court also noted that preemption concerns may be an important factor for the 35 U.S.C. §101 subject matter inquiry—that improper monopolization of “the basic tools of

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[106] *Id.*
[107] *Bascom*, 827 F.3d at 1349.
[108] *Enfish*, 822 F.3d at 1330.
[109] *McRO, Inc.*, 837 F.3d at 1314.

scientific and technological work" is a reason why such categorical carve outs against granting patents on abstract ideas exist.[110]

Bascom provides the standards on what would fail step one of the *Alice* patentable subject matter inquiry. If the patent covers a conventional, well-known method in the field of interest, then the invention would be considered abstract. This is akin to the inventive concept considerations conducted at the second phase of the 35 U.S.C. §101 subject matter inquiry.

The main takeaway from *Enfish* and *McRO* is that in the first step of the *Alice* test, a patent application is not directed to an abstract idea if (1) the invention addresses an existing problem by specific improvements rather than by conventional, well-known methods and (2) the claims do not raise preemption concerns. This encourages practitioners to define the problem as broadly as possible, while defining the scope of improvement in definite terms.

2. The Federal Circuit's Standard for Alice Step Two, and the Overlap with Step One

The second step of the *Alice* test is an inquiry of whether the patent application, which is directed to a patent ineligible subject, still contains a patent-worthy inventive concept. *Bascom* ruled in favor of granting the patent following the second step of the *Alice* test.[111] While the patent at hand was considered directed to patent ineligible subject matter, the *Bascom* court found that the content filter system invention still had an inventive concept worthy of a patent.[112] Even if elements of a claim are separately known in prior art, an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces. This inquiry seems like a lenient standard compared to the 35 U.S.C. §103 obviousness inquiry; hence, it is not clear if this step has an independent utility for invalidating or rejecting a patent. Nonetheless, the court found that merely showing that all elements of a claim were already disclosed in prior art was not sufficient reason to make an invention patent ineligible.[113]

While it is possible to infer sufficient reasons of ruling out inventive concepts from the *Bascom* case, it is still unclear what would warrant an invention to pass the second step of the *Alice* test. Cases such as *DDR Holdings v.*

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[110] *Id.*
[111] *Bascom*, 827 F.3d at 1349.
[112] *Id.*
[113] *Id.*

Hotels.com have suggested that the second step of *Alice* is satisfied since it involved a solution to a specific technological problem that "is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks."[114]

This interpretation of inventive concept becomes perplexing when comparing the two steps of *Alice*—both steps look to whether the proposed solution addresses problems that are specific to a given field of interest. While we would need additional cases to gain insight on whether the two steps have truly distinct functions, at the very least the Federal Circuit provided essential guidelines on what may be deemed as patentable software.

C. Applying Patentable Subject Matter to Machine Learning Inventions

As the *Bascom* court has taught, the first step in the *Alice* inquiry is to ask whether an invention (1) provides a solution to an existing problem by (2) a specific, non-generic improvement that (3) does not preempt other methods of solving the existing problem. Applying this test to inventions in machine learning, *mathematical* improvements and *computational* improvements would be treated differently.

As mentioned before, a key aspect of machine learning is the "noise" associated with the data sets.[115] Another concern is the fitting of a given algorithm to a certain model. Methods that facilitate the computations of the training process may be deemed as a specific improvement. However, machine learning algorithms themselves, including the base models that the algorithm fits the training into would not be pertinent to just a specific improvement. Hence, generic mathematical methods applicable to various problems are directed to an abstract idea. For example, an invention that addresses the issue of normalizing data from different sources would be a computational issue and hence would pass the *Alice* test given that it did not preempt other solutions to the problem of data normalization. On the other hand, a specific mathematical equation that serves as a starting model for the machine learning algorithm would be mathematical and hence directed to an abstract idea. Even if the mathematical starting model is only good for a specific application, the model is not a specific improvement pertinent to that application. Although the model may not necessarily be a good starting

[114] *See* Toyos, *supra* note 94, at 121; *DDR Holdings, LLC v. Hotels.com*, 773 F.3d 1245, 1257 (Fed. Cir. 2014).

[115] *See supra* Section II-A.

model for other applications, it is nonetheless a generic solution that applies to other applications as well.

CONCLUSION

While highly restrictive, the guidelines from the Federal Circuit still allow the grant of patent rights for the computational aspects of machine learning algorithms. The guidelines also would prevent highly preemptive mathematical innovations, including data-generating patents such as machine learning models.

The narrow range of patentability makes a patent regime appealing for computational methods. The recent emphasis on preemption concerns acts in favor of preventing data network effects based on data-generating patents. While not discussed in this paper, other patentability requirements such as obviousness or definiteness would further constraint the grant of overly broad data-generating patents.

Such an approach strikes the appropriate balance between promoting innovation and encouraging data reuse for societal benefits. Compared to other approaches of providing protection over innovations in machine learning, the narrowly tailored approach for patent rights for computational inventions fits best with the policy goal of promoting innovation through data reuse. The industry trends in collaboration and recruiting also matches the proposed focus on patent law protection.

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A JUDICIAL 'SUPPLEMENT' TO ADVERTISING LAW: THE FOURTH CIRCUIT'S GNC DECISION AND POLICY IMPLICATIONS FOR THE DIETARY SUPPLEMENT INDUSTRY

GIA WAKIL*

In Brown v. GNC Corp., the Fourth Circuit offered a novel solution to the truth-in-advertising dilemma that plagued the dietary supplement industry. Plaintiffs alleged that claims made in connection with defendant's joint health supplements were false because the "vast weight of competent and reliable scientific evidence" did not support such representations. The Fourth Circuit rejected this allegation of literal falsity, which hinges instead on the "existence (or not) of scientific consensus." To survive a motion to dismiss, plaintiffs must allege that all reasonable experts in the field agree that the representations are false. This holding generated criticism from prominent academics, who submitted an amicus brief favoring an alternative result.

This Note argues that the Fourth Circuit's unanimous holding in GNC is the preferred solution to the age-old truth-in-advertising question, particularly during a period of scientific uncertainty. In reaching this conclusion, this Note surveys the existing patchwork of advertising laws, details the factual background of the GNC case, and addresses problematic aspects of the amicus brief. It

* J.D. Candidate, New York University School of Law, 2018; B.A., Political Science, Columbia University, 2011. The author would like to thank Kenneth A. Plevan for his guidance and support, as well as the invitation to explore this research topic. She thanks Professor Barton Beebe, her faculty advisor, for his edits and insights, and her fellow JIPEL Notes Program participants: Julian Pymento, Ryan Jin, Vincent Honrubia, and Neil Yap.

concludes by describing the merits of the Fourth Circuit's decision, which has positive implications for consumers and manufacturers alike.

INTRODUCTION

Every home has a story, as the old adage goes, and the story in this Note is set in the modern-day vitamin cabinet. Few items are as ubiquitous in American homes as the pill bottle. From vitamins like A and C, or minerals like iron and zinc, the supplements found in a single household typically run the full alphabet. The majority of adults in the United States take one or more dietary supplements occasionally, or even every day,[1] with sales to American consumers exceeding $35 billion per year.[2] Americans rely on supplements to ameliorate nutritional deficiencies or to maintain their health. And yet, despite the prevalence of supplements, concerns abound about their efficacy and the veracity of claims supporting the use of supplements. Oftentimes, the prospect of shorter colds, stronger nails, or improved general health justifies the price of the "gamble" in the minds of many consumers.

It was in similar, health-conscious hopes that consumers in the *In re GNC Corp.*[3] case had reached for bottles of glucosamine-chondroitin, two common ingredients in joint health specialty products.[4] The labels touted that the mixtures "promote[] joint mobility and flexibility" and provide "[c]linical strength for daily long-term use." GNC allegedly had, and on some labels cited to, a reasonable scientific basis for these claims, though its legitimacy was tarnished in the face of mounting scientific evidence indicating otherwise.

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[1] National Institutes of Health, *Dietary Supplements: What You Need To Know*, U.S. DEP'T OF HEALTH & HUM. SERVS. (June 17, 2011), https://ods.od.nih.gov/HealthInformation/DS_WhatYouNeedToKnow.aspx.

[2] *See* National Institutes of Health, *Multivitamin/mineral Supplements: Fact Sheet for Health Professionals*, U.S. DEP'T OF HEALTH & HUM. SERVS. (July 8, 2015), https://ods.od.nih.gov/factsheets/MVMS-HealthProfessional/ ("In 2014, sales of all dietary supplements in the United States totaled an estimated $36.7 billion.").

[3] *See* Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015), *reh'g denied* Ct. Order Den. Mot. for Reh'g and Reh'g En Banc (July 27, 2015), ECF No. 47.

[4] There is a well-publicized association between glucosamine-chondroitin and joint health. An article on WebMD states that the natural glucosamine in our bodies "helps keep up the health of your cartilage – the rubbery tissue that cushions bones at your joints." As we age, levels of the natural compound begin to drop, which leads to the gradual breakdown of the joint. WebMD reports that there is "some evidence" that glucosamine sulfate supplements help counteract this problem, though experts "aren't sure how." There are a plethora of glucosamine supplements advertising joint health benefits, such as Osteo Bi-flex and Nature's Bounty glucosamine-chondroitin compound. The widespread use of glucosamine-chondroitin has even reached our pets, with supermarket giant Trader Joe's and others proffering a line of the supplement for dogs. *Is Glucosamine Good for Joint Pain?*, WEBMD (Jan. 17, 2018), https://www.webmd.com/vitamins-and-supplements/supplement-guide-glucosamine.

After years of medical controversy examining whether glucosamine-chondroitin is effective, lawsuits against a variety of its manufacturers and sellers popped up across the United States.[5] Perhaps the consumers were tired of "gambling" on glucosamine and thought that the products did not live up to their billing. More likely, plaintiffs' lawyers had been following the debate, and they believed there were issues to be asserted in the form of consumer class actions.[6] Multiple false advertising lawsuits against GNC commenced between March and December 2013, with allegations of consumer deception across California, Florida, Ohio, New York, Illinois, Pennsylvania, and New Jersey.[7]

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[5] The glucosamine-chondroitin lawsuits are too numerous to list here, but are discussed later in Section III.B. *See, e.g.*, Lerma v. Schiff Nutrition Int'l, Inc., No. 11-cv-1056 (S.D. Cal. filed May 13, 2011); Padilla v. Costco Wholesale Corp., No. 11-C-7686 (N.D. Ill. filed Oct. 28, 2011); Quinn v. Walgreen Co., No. 12-cv-8187 (S.D.N.Y. filed Nov. 9, 2012). According to TruthInAdvertising.org, at least nine class action lawsuits had been filed by October 2013 claiming that companies were falsely marketing the health benefits of glucosamine supplements. *Consumers Claim This Joint Is Not Jumping*, TRUTH IN ADVERTISING ORGANIZATION (Oct. 22, 2013), https://www.truthinadvertising.org/consumers-claim-joint-jumping/. Some of the lawsuits have resulted in settlements. *See, e.g.*, McCrary v. The Elations Company, LLC, No. 13-cv-00242 (C.D. Cal. filed Feb. 07, 2013); Pearson v. NBTY, Inc., No. 1:11-cv-07972 (N.D. Ill. filed Nov. 09, 2011). Additionally, there is no indication that these lawsuits will stop being filed. As of December 2017, glucosamine-chondroitin is still a hot topic in false advertising. According to a consumer class action blog, plaintiffs' firms have commenced investigations into Osteo Bi-flex, Schiff Move Free and Glucosamine, Walmart's Spring Valley Glucosamine, and Nature Made Triple Flex, among others. Tracy Colman, *Different Brands of Glucosamine Chondroitin May Be Falsely Advertised*, TOP CLASS ACTIONS (Dec. 21, 2017), https://topclassactions.com/lawsuit-settlements/lawsuit-news/828289-different-brands-of-glucosamine-chondroitin-may-be-falsely-advertised/.

[6] It is the author's suggestion that the facts of these cases offer support for the latter. Section III.B. offers commentary on this aspect of the glucosamine lawsuits.

[7] Procedurally, these cases are as complex and interesting as the ruling itself. Ultimately, according to the Fourth Circuit's order, there were five GNC plaintiffs (Howard, Toback, Lerma, Calvert, and Gaatz) and three Rite Aid plaintiffs (Flowers, George, and Gross). *GNC*, 789 F.3d at 509 n.1. The underlying lawsuits were consolidated in the U.S. District Court for the District of Maryland. The consolidated cases are docketed as: Howard v. GNC Corp., No. 14-cv-00002 (D. Md. filed Jan. 3, 2014); Toback v. GNC Holdings, Inc., No. 14-cv-00122 (D. Md. filed Jan. 14, 2014); Lerma v. GNC Corp., No. 14-cv-00120 (D. Md. filed Apr. 18, 2013); Calvert v. GNC Corp., No. 14-cv-00123 (D. Md. filed Jan. 16, 2014). The Rite Aid product case was Flowers v. Rite Aid, No. 14-cv-00465 (D. Md. filed Feb. 18, 2014). *Flowers* was effectively a lawsuit against GNC, as the products at issue were manufactured for Rite Aid by GNC, and GNC was contractually obligated to indemnify Rite Aid for the claims at issue in the litigation. Consolidated Amended Complaint at ¶ 2, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No.20. To the best of the author's knowledge, GNC did not contest this assertion. There are multiple related lawsuits that

The controversy surrounding truthfulness in supplement advertising has only grown louder in recent years, and for good reason. Over the last fifteen years, sales of vitamins, minerals, and nutritional and herbal supplements—which, together, comprise the dietary supplement industry—have surged. In December 2013, McKinsey & Company estimated the global value of the supplement market to be $82 billion, with a high concentration of that value in the U.S.[8] High levels of sales appear to correlate with high consumer confidence. The majority of U.S. adults—68 percent—take supplements, and nearly 85 percent of those consumers express "overall confidence in the safety, quality and effectiveness of dietary supplements."[9] Competition in the supplement industry is fierce and no one company accounts for more than a five percent share.[10]

Unbeknownst to many consumers, the laws governing supplement labeling and advertising are notoriously tricky to navigate. The Food and Drug Administration (FDA) issues rules and regulations regarding supplement labeling, marketing, and safety,[11] but there are significant limitations to FDA oversight. For example, the manufacturer or seller does not need to prove that a claim is accurate

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were resolved separately, such as Galvin v. GNC, No. 14-cv-00810 (D. Md. filed Mar. 21, 2014). Although Brown v. GNC Corp., No. 13-05890 (N.D. Cal. filed Dec. 19, 2013), was also transferred to the district court by the Multidistrict Litigation Panel, the Consolidated Amended Complaint does not include Yvonne Brown (the plaintiff in that action) among the named plaintiffs. *GNC*, 789 F.3d at 509 n.2. Galvin was voluntarily dismissed in October 2015, and therefore did not proceed with the other consolidated cases.

[8] Warren Teichner & Megan Lesko, *Cashing in on the booming market for dietary supplements*, MCKINSEY & COMPANY MARKETING & SALES INSIGHTS (Dec. 2013), https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/cashing-in-on-the-booming-market-for-dietary-supplements.

[9] Council for Responsible Nutrition, *The Dietary Supplement Consumer*: *2015 CRN Consumer Survey on Dietary Supplements*, CRN USA (2015), http://www.crnusa.org/CRNconsumersurvey/2015/.

[10] *Country Report: Vitamins in the US*, EUROMONITOR INTERNATIONAL (Nov. 2017), http://www.euromonitor.com/vitamins-and-dietary-supplements-in-the-us/report. This insight into the brutally competitive landscape offers some explanation for GNC's insistence on keeping its joint health tag line. Marketing and advertising claims, such as "promotes joint health," are valued shortcuts for consumers as they navigate supplement shelves. The alternative is a sea of supplements that are labeled and identified solely by their active ingredient(s), like a bottle that simply reads "Vitamin D" or "Glucosamine-Chondroitin" on the front, without further description of health benefits. A consumer who is unfamiliar with glucosamine-chondroitin may not buy the product, were it not for the "promotes joint health" byline. The explanation provides quick information and incentive to buy.

[11] *See* National Institutes of Health, *supra* note 1.

to the FDA's satisfaction *before* it appears on the product,[12] and the agency reviews substantiation for claims periodically, as resources permit.[13] The Federal Trade Commission (FTC) polices health and safety claims made in advertising for dietary supplements,[14] but its oversight is similarly limited by the availability of resources.[15]

High sales, patchy government supervision, and dubious marketing practices have created a "perfect storm" on the litigation frontier. False advertising in the consumer class action context is a rapidly growing area of law.[16] *GNC* is a rich case study for exploring issues related to truth in advertising, particularly when dealing with scientific controversy. In *GNC*, the Fourth Circuit held that the existence of a single expert in agreement with a claim bars the statement from being found literally false.[17] Since Plaintiffs did not challenge the validity of GNC's study that supported the claims found on bottles—even after an opportunity to amend their complaint —

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[12] *FDA 101*: *Dietary Supplements*, U.S. FOOD & DRUG ADMIN. (Nov. 6, 2017), http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm050803.htm.

[13] *Id*.

[14] *See* National Institutes of Health, *supra* note 1.

[15] For more information about the FDA and FTC's roles in policing supplement labeling and advertising, see Section I.B., *infra*.

[16] Kenneth A. Plevan, *Recent Trends in the Use of Surveys in Advertising and Consumer Deception Disputes*, 15 CHI.-KENT J. INTELL. PROP. 49, 61 (2016) (commenting on the "recent explosion of consumer deception lawsuits brought as putative class actions, filed by private plaintiffs under state consumer protection laws . . ."); *see also* Theodore V.H. Mayer, *Recent Developments and Current Trends in United States Class Action Law*, 826 PLI/Lit 313, 325 (May 24, 2010) (citing Federal Judicial Center, *The Impact of the Class Action Fairness Act of 2005 on the Federal Courts* 4 (4th interim report, 2008)) ("Among the most remarkable trends from the period between 2001 and 2007 [was] . . . the continuing growth of consumer-protection or consumer-fraud class actions, which increased by more than 150 percent and now account for 20 percent of all federal class actions.") Private plaintiffs have increasingly availed themselves of consumer protection statutes. According to one study of over 17,000 reported federal district and state appellate decisions, "[b]etween 2000 and 2007 the number of [consumer protection act] decisions reported in federal district and state appellate courts increased by 119%. This large increase in CPA litigation far exceeds increases in tort litigation as well as overall litigation during the same period." *See* Searle Civil Justice Institute, *State Consumer Protection Acts: An Empirical Investigation of Private Litigation Preliminary Report* (Dec. 2009). An additional concern is the "double litigation" frontier: "There is nothing to prevent a private litigant from filing suit against a consumer product advertiser or manufacturer after a federal regulatory agency, such as the Federal Trade Commission, takes action against the same company and obtains full monetary redress for consumers." Dana Rosenfeld & Daniel Blynn, *The "Prior Substantiation" Doctrine: An Important Check On the Piggyback Class Action*, 26 ANTITRUST 1, 68 (Fall 2011). Rosenfeld and Blynn state that there is an emerging trend of plaintiffs filing class action complaints that are "virtually identical to or rely heavily upon" FTC complaints or FDA warning letters. *Id*.

[17] Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505, 515 (4th Cir. 2015).

they could not prove that glucosamine-chondroitin was *not* beneficial to joint health. In other words, at least one reasonable expert or study is sufficient to carry the claim on the bottle, even if the vast weight of scientific evidence suggests otherwise. Furthermore, a "battle of the experts" did not necessitate a jury trial, nor did it forestall judgment in the supplement manufacturer's favor.

This Note argues that the Fourth Circuit's holding in *GNC* is the preferred solution to the truth-in-advertising dilemma that is rampant in the supplement industry, particularly in periods of scientific controversy. Scientific evidence is neither static nor consistent; there can be two pools of reasonable evidence on either side of a medical controversy, and the minority position may well be proven right. Reserving judgment for juries beyond the pleadings stage would overestimate juries' abilities to resolve highly technical scientific controversies. Both consumers and retailers benefit from consistent interpretation of consumer protection measures, and the Fourth Circuit has articulated a workable standard for these various state law claims.

The argument unfolds in three parts. Part I surveys the landscape of advertising laws, with heightened focus on the Lanham Act and state consumer deception statutes. Supplement advertising should be treated as a carve-out amidst this patchwork of laws, and I will argue that the Fourth Circuit's ruling, if appropriately limited, does no damage to the existing doctrines. Part II offers a detailed description of the *GNC* case, both at the district and appellate court levels. This background serves to illustrate why the unanimous *GNC* judgment is an interesting solution to a difficult truth-in-advertising question. Part III assesses the policy implications of the Fourth Circuit's decision. It begins by addressing criticism of the *GNC* ruling, which was presented in an Amicus Brief submitted by a prominent group of law professors. It then responds to the criticism provided in the Amicus Brief and counters with the merits of the Fourth Circuit's holding. The Conclusion reviews the argument and demonstrates why the analysis presented is persuasive.

I
THE LEGAL LANDSCAPE OF THE SUPPLEMENT INDUSTRY

A. Sources of Truth-in-Advertising Law

There is a patchwork of federal, state, regulatory, and common law sources of truth-in-advertising law, in addition to industry-specific trade associations that advise dietary supplement manufacturers and retailers. Both the FTC and FDA[18] can initiate their own investigations into false advertising and labeling of dietary supplements. Their overlapping jurisdiction and shared enforcement responsibilities are explained further in Section I.B., *infra*. However, since actual oversight by these bodies is notoriously constrained, consumers and business competitors have often resorted to alternative forms of legal redress. Companies may challenge claims made by their competitors under the federal trademark law, Lanham Act § 43(a), discussed in Section I.C., *infra*.[19] While the federal cause of action is not available to consumers, the Lanham Act remains instructive in understanding state deception laws that *are* available to consumers.[20] The relationship between the Lanham Act and state consumer protection laws is explored further in Section I.D., *infra*. Lastly, the dietary supplement industry finds guidance from self-regulatory associations: the Council for Responsible Nutrition (CRN) is its primary trade association,[21] and the Better Business Bureau's National Advertising Division (NAD) offers alternative forms of dispute resolution. [22]

B. The FTC-FDA Regulatory Regime

Congress has entrusted matters of food, drug, and supplement policing to both the FTC and FDA,[23] which have overlapping jurisdiction and work together to ensure consistency in consumer products.[24] "In 1971, the agencies issued a memorandum of understanding under which the FTC assumed primary responsibility for advertising and the FDA assumed primary responsibility for labeling of food, medical devices, and cosmetics."[25] Advertising in the FTC's

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[18] Plaintiffs may seek redress from the Federal Trade Commission under the FTC Act, 15 U.S.C. §§ 41-58. Barton Beebe, *Trademark Law: An Open-Source Casebook*, Part IV, 2 (Jul. 20, 2017), http://tmcasebook.org/wp-content/uploads/2017/08/BeebeTMLaw-4.0-Introduction.pdf.

[19] Lanham Act § 43(a)(1)(B) is codified at 15 U.S.C. § 1125(a)(1)(B).

[20] The state consumer deception statutes are also known as "little" or "baby" FTC Acts. *See* Beebe, *supra* note 18.

[21] Denise E. DeLorme, Jisu Huh, Leonard N. Reid & Soontae An, *Dietary supplement advertising in the US: A review and research agenda*, 31 INT'L J. OF ADVERT. 547, 555 (2012).

[22] *See* Beebe, *supra* note 18. *See also* Joshua M. Dalton & Jared A. Craft, *What You Should Know About NAD False Advertising Claims*, LAW360 (Jan. 4, 2013), https://www.law360.com/articles/403099/what-you-should-know-about-nad-false-advertising-claims.

[23] Note that the FDA and FTC are agencies of different stature. Unlike the FTC, the FDA is not an independent entity of the U.S. government. The FDA is nestled under the Department of Health and Human Services and funded by the Department of Agriculture.

[24] *Advertising Dietary Supplements*, CONSUMER HEALTHCARE PRODUCTS ASSOCIATION, http://www.chpa.org/DS_Advertising.aspx (last visited Mar. 23, 2017).

[25] REBECCA TUSHNET, ADVERTISING AND MARKETING LAW 1289 (3rd ed. 2014).

domain includes print and broadcast ads, infomercials, catalogs, and similar direct marketing materials; labeling refers to the information panels on product itself, such as the nutritional content and manufacturer address.[26]

There is an enormous disparity between what the law permits and what the agencies enforce. Dietary supplements have posed a unique challenge to the joint FTC-FDA working relationship. Neither food nor drug, dietary supplements occupied a "liminal" regulatory category for much of the 20th century.[27] By the 1990s, however, Congress overrode attempts by the FDA to regulate supplements more extensively. The resulting legislation paved the way for the modern explosion of supplement products on the American market.[28]

1. FTC Regulation of Supplement Advertising

The FTC is the federal consumer protection agency charged with safeguarding consumers against "unfair and deceptive trade practices," under the authority granted to it in Section 5(a) of the Federal Trade Commission Act. It uses two investigative methods to challenge advertising it finds to be false: either compelling information from a potential defendant (for example, in the form of a subpoena), or requesting voluntary cooperation (in the form of an access letter). Notably, consumers do not enjoy the same authority in compelling disclosure of a corporate advertiser's studies.

The FTC has articulated its own standard for actionable false advertising. The 1972 *Pfizer* doctrine[29] is an unsubstantiated theory of liability: no dissemination (of an ad claim) without prior substantiation. For an advertisement to be substantiated, the advertiser must have had a "reasonable basis" for its advertising claims *before* they are disseminated. For health or safety claims, which include representations made in connection with dietary supplements, the Commission has typically required a relatively high level of substantiation. In such cases, the "reasonable basis" must be "competent and reliable scientific evidence," typically defined as "tests, analyses, research, studies, or other evidence based upon the expertise of

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[26] U.S. FOOD & DRUG ADMIN. GUIDANCE FOR INDUSTRY: A FOOD LABELING GUIDE, (revised Jan. 2013), https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm2006828.htm.

[27] Mark Nichter & J.J. Thompson, *For my wellness, not just my illness: North Americans' use of dietary supplements*, 30 CULTURE, MED. & PSYCHIATRY 175, 176 (2006). Unlike drugs, supplements can be readily purchased without a prescription in a wide variety of brick-and-mortar stores and online.

[28] 15 U.S.C. § 45 (2012).

[29] Pfizer, Inc., 81 F.T.C. 23 (1972).

professionals in the relevant area, that has been conducted and evaluated in an objective manner by persons qualified to do so, using procedures generally accepted in the profession to yield accurate and reliable results."[30] The FTC reaffirmed this standard in its Policy Statement Regarding Advertising Substantiation, and there are numerous representative cases applying the doctrine.[31]

2. FDA Regulation of Supplement Labeling

Unlike drugs, dietary supplements do not need FDA approval before being legally marketed in the United States. Under the Dietary Supplement Health and Education Act ("DSHEA") of 1994,[32] the FDA's role in regulating the dietary supplement industry is constrained. Under DSHEA, a supplement company is responsible for determining that its products are safe and that any representations made are substantiated by adequate evidence of their truthfulness. A company does not have to provide the FDA with the evidence it relies on to substantiate safety and effectiveness unless specifically requested. Instead, the FDA has relied on a disclosure theory of consumer protection, requiring firms to identify the product as a dietary supplement and include a "Supplement Facts" panel that identifies each ingredient contained in the product.[33]

C. The Lanham Act

Congress enacted the Lanham Act (codified at 15 U.S.C. §§ 1051-1127 (2012)) in 1946. It serves both as the federal trademark law and as a primary source of truth-in-advertising regulation. Section 43(a) of the Lanham Act provides that "any person who believes that he or she is or is likely to be damaged" by a false or misleading description or representation of fact may sue.[34] The Trademark Revision

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[30] Lesley Fair, *Federal Trade Commission Advertising Enforcement*, FED. TRADE COMM'N (revised Mar. 1, 2008), https://www.ftc.gov/sites/default/files/attachments/training-materials/enforcement.pdf; *see, e.g.*, Brake Guard Products, Inc., 125 F.T.C. 138 (1998); ABS Tech Sciences, Inc., 126 F.T.C. 229 (1998).

[31] *See, e.g.*, Removatron International Corp., 111 F.T.C. 206 (1988), *aff'd* 884 F.2d 1489 (1st Cir. 1989) ("adequate and well-controlled . . . clinical testing" is required to substantiate claims for hair removal product); Schering Corp., 118 F.T.C. 1030 (1994) (consent order) (tests and studies relied upon as "reasonable basis" must employ appropriate methodology and address specific claims made in the advertisement).

[32] Dietary Supplement Health and Education Act of 1994, Pub. L. No. 103-417, 108 Stat. 4325 (codified in scattered sections of 21 U.S.C.).

[33] *Questions and Answers on Dietary Supplements*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/Food/DietarySupplements/UsingDietarySupplements/ucm480069.html (last updated Nov. 29, 2017).

[34] In its current form, section 43(a)(1)(B) states: (1) Any person who, on or in connection with any goods or services, or any container for goods, uses in commerce any word, term, name,

Act of 1988 substantially broadened the scope of section 43(a) to cover a company's false representations about itself and others.[35]

Section 43(a) is the core legal protection for those injured by false advertising. The Supreme Court has interpreted standing under section 43(a) to be limited to business competitors; consumers are excluded from filing suits under the Lanham Act. In *Lexmark International, Inc. v. Static Components, Inc.*, the Supreme Court explained that standing to sue for false advertising under the Lanham Act requires pleading "injury to a commercial interest in sales or business reputation," and that injury must be "proximately caused by the defendant's misrepresentations."[36] The injury cognized by *Lexmark* is "unfair competition" through false or misleading advertising, rather than consumer deception or confusion. Accordingly, consumers' interests do not fall within the "zone of interests" protected by section 43(a)(1)(B).[37] As a result, plaintiffs in these lawsuits are typically commercial competitors of the alleged false advertiser.

Since remedy under the Lanham Act is unavailable to non-competitors, consumers often rely on state consumer protection statutes to bring cases against advertisers. Since these state statutes effectively police the same mischief, federal common law remains instructive in understanding the state law cause of actions.[38]

Section 43(a)(1)(B) establishes liability for two modes of advertising: advertising that is false and advertising that is misleading. Actionable representations include statements made about one's own goods or services, as well as the commercial disparagement of others. These two categories of advertising, as well as the specific violations that they encompass, are next considered.

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symbol, or device, or any combination thereof, or any false designation of origin, false or misleading description of fact, or false or misleading representation of fact, which—. . . (B) in commercial advertising or promotion, misrepresents the nature, characteristics, qualities, or geographic origin of his or her or another person's goods, services, or commercial activities, shall be liable in a civil action by any person who believes that he or she is or is likely to be damaged by such act. 15 U.S.C. § 1125(a)(1)(B) (2018).

[35] *See* Beebe, *supra* note 18, at Part IV, 2.

[36] 134 S. Ct. 1377, 1395 (2014).

[37] *Id.* at 1389; *see also* J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 27.30 (5th ed. 2017).

[38] *See* Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505, 514 (4th Cir. 2015) (noting that, although consumers cannot invoke the protections of the Lanham Act, the "considerable body of federal common law construing the Act is instructive in construing the state laws at issue here").

1. Two Modes of False Advertising

Courts are tasked with determining whether representations are either false or misleading. Both incur liability under section 43(a), but there are important doctrinal and pleading distinctions. The analysis begins with five basic elements: (i) whether the alleged misrepresentation is false or misleading, as opposed to non-actionable puffery,[39] (ii) whether a plaintiff can demonstrate actual deception or capacity for deception as a result of the falsehood, (iii) whether the falsehood or misleading information is material to a consumer's decision to buy,[40] (iv) whether a plaintiff was harmed, either by direct diversion of its sales or by a lessening of the goodwill associated with its products, and (v) whether the falsehood or deception occurs in interstate commerce.[41] These elements are conjunctive, and a plaintiff must meet all five to trigger liability.

i. Literal Falsity

Literally false representations communicate one unambiguous message, either verbally or visually, that is untrue or unsupported. These representations violate the Lanham Act without proof of consumer deception; instead, courts presume that the buying public has received the false message.[42] Consequently, plaintiffs in these

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[39] Puffery is a safe harbor for advertisers who proffer exaggerated and unsupported (or, perhaps, unsupportable) claims. It is a non-actionable carve-out from the false advertising provisions of the Lanham Act, since the statements are typically so exaggerated that no reasonable consumer could be deemed to rely on them. To fall out of the test for false advertising, statements of puffery are not considered to be statements of fact; consequently, a plaintiff would fail to meet the first element of the test. Courts have different definitions of puffery. In *Time Warner Cable, Inc. v. DIRECTV, Inc.*, the Second Circuit described one party's internet ads as "inaccurate descriptions" of the television service, but "so grossly distorted and exaggerated that no reasonable buyer would take them to be accurate depictions." 497 F.3d 144, 159 (2d Cir. 2007). In *United Industries Corp. v. Clorox Co.*, "[p]uffery is 'exaggerated advertising, blustering, and boasting upon which no reasonable buyer would rely and is not actionable under § 43(a).'" 140 F.3d 1175, 1180 (8th Cir.1998) (quoting Southland Sod Farms v. Stover Seed Co., 108 F.3d 1134, 1145 (9th Cir. 1997)). In other iterations, the puffery doctrine has protected purveyors of "The Best Beer in America," *In re* Bos. Beer Co., 198 F.3d 1370 (Fed. Cir. 1999), "The Most Advanced Home Gaming System in the Universe," Atari Corp. v. 3D0 Co., No. C 94-20298 RMW (EAI), 1994 U.S. Dist. LEXIS 8677 (N.D. Cal. May 16, 1994), and "Better Ingredients. Better Pizza," Pizza Hut, Inc. v. Papa John's Int'l, Inc., 227 F.3d 489 (5th Cir. 2005).

[40] Under *National Basketball Ass'n v. Motorola, Inc.*, the test for materiality is whether the statement "misrepresent[s] an inherent quality or characteristic of a product." 105 F.3d 841, 855 (2d Cir. 1997).

[41] Schick Mfg., Inc. v. Gillette Co., 372 F.Supp.2d 273, 276 (D. Conn. 2005).

[42] *See* Tushnet, *supra* note 25, at 259; *see also* Coca-Cola Co. v. Tropicana Prods., Inc., 690 F.2d 312, 317 (2d Cir. 1982) ("[T]he Court may grant relief without reference to the

cases can avoid the time and expense of preparing consumer surveys regarding the ad's message. The burden of proof in falsity cases is on the plaintiff, and falsity is assessed on the basis of scientific testing or related types of extrinsic evidence.[43]

A classic example of a literally false representation comes from *Coca-Cola*.[44] In 1982, Tropicana featured athlete Bruce Jenner in a television commercial for orange juice, squeezing juice out of an orange directly into a Tropicana carton while saying, "[i]t's pure, pasteurized juice as it comes from the orange." In fact, the juice was heated and, in some cases, frozen before packaging. Further, the juice did not in fact come "pasteurized" straight from the orange. The Second Circuit granted preliminary injunctive relief against the "blatantly false" statement. The plaintiff did not have to make a showing that the advertisement would mislead the consuming public.

ii. Literal Falsity by Necessary Implication

A court may evaluate an advertisement for falsity even if the representation is implied by context, rather than stated directly. This category of false advertising is referred to as false by necessary implication. Actionable advertisements of this type convey one unambiguous message. While the message is conveyed implicitly, the meaning of the message is clear and unequivocal. Ultimately, if the impression left on the viewer conflicts with reality, it is effectively treated as if that false impression was directly stated.

The Second Circuit embraced the false-by-necessary-implication doctrine for the first time in *Time Warner Cable, Inc. v. DIRECTV, Inc.*[45]—a case which provides an excellent illustration of this type of actionable falsity. A series of DIRECTV commercials featured celebrities touting the merits of the satellite service provider's 1080i high definition (HD) transmission. A commercial from the "Source Matters" campaign concluded with William Shatner stating that "settling for cable would be illogical." This statement was made in the context of surrounding text ("amazing picture quality of […] DIRECTV HD") and images (a very clear DIRECTV picture and a far inferior picture from an anonymous second provider, though cable was

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advertisement's [actual] impact on the buying public."), *abrogated on other grounds by* Fed. R. Civ. P. 52(a)(6), *as recognized in* Johnson & Johnson v. GAC Int'l, Inc., 862 F.2d 975, 979 (2d Cir. 1988).

[43] Consumer surveys are not valid supporting evidence in a falsity case, discussed further in Section I.B.2. The GNC case fits neatly within the question of literally false advertising, as the TriFlex ads and packaging presented explicit, unambiguous statements, and no evidence of consumer deception was presented. *See generally GNC*, 789 F.3d 505.

[44] *See generally Coca-Cola*, 690 F.2d 312.

[45] *See* Time Warner Cable, Inc. v. DIRECTV, Inc., 497 F.3d 144, 158 (2d Cir. 2007).

obviously targeted). Without extrinsic evidence, the district court determined that Mr. Shatner's assertion ("settling for cable would be illogical") "could only be understood as making the literally false claim that DIRECTV HD is superior to cable HD in picture quality."[46] In reality, however, DIRECTV and cable HD's picture quality were equivalent. The Second Circuit upheld this ruling for Time Warner, concluding that the impression left on the viewer conflicted with reality.[47]

2. Misleading Advertising

The second category of actionable false advertising claims are, while not literally false, deemed misleading to consumers. Such ads contain representations of fact about a product or service that are ambiguous or tend to deceive consumers. The statements may be literally true, and yet have the tendency to mislead. The language of section 43(a) deems merely misleading representations equally as objectionable as those that are literally false, explicitly rendering unlawful a "false or misleading description of fact, or false or misleading representation of fact."

There are a number of important differences between false and misleading advertising, even though both types of representations violate section 43(a). Although the categories are doctrinally distinct, the evidentiary differences are more significant in practice. Literal falsehoods—those that are false on their face—are actionable without proof of consumer deception, as in the *Coca-Cola* and *DIRECTV* cases previously considered. In a case of misleading advertising, plaintiffs must present extrinsic evidence to establish consumers' perception of the implied falsehood.[48] Such proof typically includes consumer surveys, direct consumer testimony, or consumer comments received in the ordinary course of business.

In *Vidal Sassoon, Inc. v. Bristol-Myers Co.*,[49] the Second Circuit addressed literally false as well as misleading claims. This case provides a clear example of the difference between literal falsity and misleadingness. In a television commercial, a spokesperson states that "in shampoo tests with over 900 women, Body on Tap got higher ratings than Prell for body. Higher than Flex for conditioning. Higher than Sassoon for strong, healthy looking hair." The literally false claim is that the tests involved over 900 women; in fact, only two-thirds of testers were actually adult

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[46] *Id*. at 152.

[47] *See id*. at 158. Note that the Second Circuit ruled on numerous commercials and Internet ads in this case, and some of the district court's opinion was reversed.

[48] Where an advertisement is literally true but misleading, the advertisement "has left an impression on the listener that conflicts with reality[;]" with proof of consumer confusion, the representations are considered misleading. *See id*. at 153.

[49] 661 F.2d 272 (2d Cir. 1981). *See also* 2-7 Gilson on Trademarks § 7.02 (2017).

women. The claims regarding higher satisfaction were deemed misleading based on a consumer survey assessing the message of the ad. Consumers surveyed about the commercial said that they thought each tester had tried at least two of the named products in order to compare their quality. Since this was not the actual testing procedure, the court held that consumers were deceived by the ad's claims, and that the claims were actionable as misleading.

D. State Consumer Protection Statutes

Every state has a consumer protection law that prohibits deceptive practices.[50] Many of these statutes take the form of a "little" FTC Act, incorporating the language of Section 5 of the statute for which they are named.[51] These statutes provide the basic protections for consumers engaging in thousands of transactions across the United States, prohibiting "unfair methods of competition or unfair deceptive trade practices" as well as "all forms of fraudulent, deceptive, and unfair acts." While many statutes track the federal guideline, they nevertheless may vary in form and strength from state to state.[52] State attorneys general and consumers may bring suits pursuant to these acts.

As mentioned *infra*, the state consumer deception statutes at issue in *GNC* were interpreted in accordance with the great body of federal common law surrounding false advertising and the Lanham Act. There remains a significant difference in the standing requirements: in a Lanham Act lawsuit, the plaintiff is typically a competitor; in putative consumer class action lawsuits, representatives must allege that they were personally deceived to have standing.[53] Despite these differences in standing, the laws have been interpreted relatively congruously. The mischief to be corrected, in both cases, is false advertising and unfair competition. However, there is no requirement that each state's consumer deception law track the Lanham Act or federal case law.

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[50] CAROLYN L. CARTER, CONSUMER PROTECTION IN THE STATES: A 50-STATE REPORT ON UDAP STATUTES, 5 (Feb. 2009), http://www.nclc.org/images/pdf/udap/report_50_states.pdf.

[51] 2-7 Gilson on Trademarks § 7.02 (2017).

[52] CARTER, *supra* note 50, at 5.

[53] *See* Kenneth A. Plevan & Angela Colt, *Consumer Surveys: Certification*, BLOOMBERG BNA PROD. SAFETY & LIAB. REP. 4 (Sept. 12, 2016).

II
THE *GNC* CASE AND THE GLUCOSAMINE-CHONDROITIN PROBLEM

A. Factual Background

General Nutrition Corporation (GNC), a national nutritional products retailer, has manufactured and sold a line of joint health supplements[54] for years. These products, which list glucosamine, chondroitin, and various other compounds as the primary active ingredients, are marketed collectively under the "TriFlex" brand. Although the products differ slightly in their total combination of ingredients, they advertise similar claims[55]; essentially, the TriFlex brand improves the health,

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[54] *See* Consolidated Amended Complaint at ¶ 26-35, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.20. For reference, the four GNC products at issue, according to the Plaintiffs, were TriFlex, TriFlex Sport, TriFlex Fast-Acting, and TriFlex Complete Vitapak. The six Rite Aid products at issue are Rite Aid Glucosamine/Chondroitin, Rite Aid Natural Glucosamine/Chondroitin, Rite Aid Glucosamine Chondroitin Advanced Complex, Rite Aid Glucosamine Chondroitin, Triple Strength + MSM, Rite Aid Glucosamine Chondroitin + MSM, and Rite Aid Glucosamine Chondroitin Advanced Complex with HA. The court does not distinguish between the GNC and Rite Aid brands, nor does it distinguish between the individual products at issue.

[55] *See* Consolidated Amended Complaint at ¶ 26-37, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. Jun. 20, 2014) ECF No.20; *see also* In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014). The claims on the labels, as presented by Plaintiffs and GNC, are as follows. The GNC TriFlex Dietary Supplement label contains "Maximum strength now with hyaluronic acid" and "Promotes joint mobility and flexibility." The GNC TriFlex Sport label contains: "Protects joints from wear and tear of exercise," "Maximum strength joint comfort for active individuals," and "Clinical strength for daily long-term use." TriFlex Fast-Acting label contains: "Now with a joint cushioning blend including hyaluronic acid and vitamin C," "Maximum strength, fast-acting support – works in days," and "Clinical strength for daily long-term use." Lastly, the TriFlex Complete Vitapak label contains: "Maximum strength, fast-acting joint comfort–works in days," "Rebuilds cartilage and lubricates joints," and "Supports natural anti-inflammatory response." The Rite Aid Glucosamine/Chondroitin Dietary Supplement label contains "helps rebuild cartilage and lubricate joints." Each label contains an FDA disclaimer: "This statement has" or "these statements have" "not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease." It appears that the only product to include a "here's proof" claim is TriFlex Fast-Acting. There is a reference to a scientific study that supports GNC's representations: "Clinically studied doses of glucosamine and chondroitin combined with MSM and a proprietary herbal blend, which is shown to improve joint comfort and function. In a 12-week multi-center, randomized, double blind, placebo controlled study of 60 adults, subjects taking 250 mg/day of the GNC TriFlexTM Fast-Acting Blend showed statistically significant

comfort, and function of joints. The label for one product, TriFlex Fast-Acting, included a "[c]linically studied" establishment claim: a "12-week multi-center, randomized, double-blind, placebo controlled study of 60 adults [. . .] taking 250 mg/day of the GNC TriFlex Fast-Acting Blend" proved that the product was "shown to improve joint comfort and function," in addition to promising 20% improvement in joint function and 25-30% improvement in joint flexibility.[56] GNC produced a similar line of products for Rite Aid, which claimed to "promote joint health" and "help[. . .] rebuild cartilage and lubricate joints." In compliance with FDA guidelines, all of the TriFlex and Rite Aid products included the disclaimer: "This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease."

Beginning in March 2013, class action lawsuits against GNC and Rite Aid popped up across the United States. Plaintiffs in California, Illinois, Florida, New York, New Jersey, Pennsylvania, and Ohio alleged violations of an array of state consumer protection, deceptive practices and/or express warranty statutes in regard to the glucosamine-chondroitin products.[57] In December 2013, the pending lawsuits were consolidated by the Judicial Panel on Multidistrict Litigation and, pursuant to 28 U.S.C. § 1407, transferred to the U.S. District Court for the District of Maryland.[58]

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improvements in measures of joint function and joint flexibility within 30 days compared to subjects on placebo."

[56] *See* Defendant's Memorandum in Support of its Motion to Dismiss Class Action Complaint, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.38; *see also* Rebecca Tushnet, *Fourth Circuit Destroys Literal Falsity*, REBECCA TUSHNET'S 43(B)LOG (June 30, 2015), http://tushnet.blogspot.com/2015/06/fourth-circuit-destroys-literal-falsity.html. The GNC study was not published or otherwise publicly available, and there is currently no law requiring such disclosure.

[57] Some of the state consumer protection laws at issue include the California False Advertising Law, § 17500, *et seq*. ("FAL"), the California Unfair Competition Law, Cal. Bus. & Prof. Code § 17200, et seq. ("UCL"), the Florida Deceptive and Unfair Trade Practices Act, Fla. Stat. §§ 501.201, *et seq*. ("FDUTPA"), Illinois Consumer Fraud and Deceptive Business Practice Act, 815 Ill. Comp. Stat. 502/1, *et seq*. ("ICFA"), the New York Consumer Protection From Deceptive Acts and Practices Law, N.Y. Gen. Bus. Law § 349, *et seq*. ("NYGBL"), Ohio Rev. Code Ann. § 1302.26, the New Jersey Consumer Fraud Act, N.J.S.A. 56:8-1, *et seq*. ("NJCFA"), Pennsylvania Unfair Trade Practices and Consumer Protection Law, 73 Pa. Stat. Ann. §§ 201-1, *et seq*. ("PUTPCPL").

[58] In re GNC Corp. TriFlex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-120, 2014 U.S. Dist. LEXIS 84184 at *1 (D. Md. June 20, 2014).

B. The Complaint

In the Consolidated Amended Complaint, Plaintiffs alleged that the "*overwhelming weight* of high quality, credible and reliable studies demonstrate that glucosamine and chondroitin…do not provide joint health benefits" (emphasis added).[59] They stated that the inefficacy of these supplements was "generally recognize[ed]" by the scientific community.[60] In support of their allegations, Plaintiffs cited to thirteen studies released between 2004 and 2013.[61] In the studies, researchers concluded that (1) glucosamine and chondroitin did not reduce symptoms for osteoarthritic users or chronic joint pain sufferers (who, Plaintiffs alleged, were an appropriate proxy for non-arthritic users), and (2) MSM, another compound found in the TriFlex products, did not provide pain or joint symptom relief for osteoarthritic consumers. Notably, the Plaintiffs did not provide any testing of GNC's particular products or combination of ingredients. Instead, they relied on the "vast weight of competent and reliable scientific evidence" (i.e., the cited studies) to infer that the "ingredients in GNC's TriFlex Products do not work as represented" and that the "representations [were] false."[62]

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[59] Consolidated Amended Complaint at ¶ 38, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.20.

[60] *Id*.

[61] The studies can be found in the Consolidated Amended Complaint at ¶¶ 39-48, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.20.

[62] Consolidated Amended Complaint at ¶ 32, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.20.

Defendants GNC and Rite Aid filed a Motion to Dismiss,[63] arguing that the studies did not test the products (or specific combination of ingredients) at issue,[64] that no representations were made with regard to improving osteoarthritis symptoms, and that osteoarthritis patients were not an appropriate proxy for non-arthritic users, among other deficiencies. Regarding the osteoarthritis issue, Defendants specifically cited to the FDA disclaimer on all of the labels, which state that the products are "not intended to diagnose, treat, cure, or prevent any disease."[65]

C. Decision Granting Motion to Dismiss

In spite of Plaintiffs' allegations, District Court Judge J. Frederick Motz dismissed the Complaint with leave to amend. He found that Plaintiffs' allegations regarding the "vast weight of scientific evidence"—in light of GNC's study to the contrary—could not support the single conclusion that the claims are false.[66] Under

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[63] Since this case is considered procedurally significant, it is important to say a word about the legal standard on a motion to dismiss. A Rule 12(b)(6) motion to dismiss challenges the legal sufficiency of a complaint. Fed. R. Civ. P. 12(b)(6); *see also* Presley v. City of Charlottesville, 464 F.3d 480, 483 (4th Cir. 2006). The court has drawn a line between the "mere possibility" and "plausibility" that a defendant has acted unlawfully; plaintiff must meet the latter to survive a motion to dismiss. Ashcroft v. Iqbal, 556 U.S. 662, 678 (2009). The issue is whether plaintiff has stated enough factual matter, rising above the speculative level, to warrant a claim for relief. To defeat a 12(b)(6) motion, a complaint's factual allegations must be sufficient to "raise a right to relief above the speculative level." Bell Atl. Corp. v. Twombly, 550 U.S. 544, 555 (2007). The complaint must contain "sufficient factual matter, accepted as true, to state a claim for relief that is plausible on its face." *Ashcroft*, 556 U.S. at 678. The "mere possibility of misconduct" is insufficient to avoid dismissal. *Id*. at 679. Likewise, "[l]abels and conclusions" and "naked assertion devoid of further factual enhancement" will fail to show that plaintiff is entitled to relief. *Id*. at 678. Ultimately, Plaintiffs' bare assertions were insufficient to establish that the representations are false.

[64] Notably, similar and even predicate cases challenging the efficacy of glucosamine-chondroitin had been dismissed on similar grounds. *See, e.g.*, Toback v. GNC Holdings, Inc., No. 13-80526, 2013 U.S. Dist. LEXIS 131135, at *16 (S.D. Fla. Sept. 13, 2013) ("Plaintiff's allegations regarding the inefficacy of glucosamine and chondroitin simply fail to address the efficacy of the TriFlex Vitapak's multifarious composition in promoting joint health . . ."); Eckler v. Wal-Mart Stores, Inc., No. 12-727, 2012 WL 5382218, at *6 (S.D. Cal. 2012) (plaintiff's studies did not assess the "overall formulation that's behind the representations at issue," and so "the Court would be left with no facts from which to infer that [defendant] is liable for false advertising.").

[65] Defendants' Memorandum in Support of their Motion to Dismiss Consolidated Amended Complaint at 5, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No.25.

[66] The Consolidated Amended Complaint repeatedly described the TriFlex advertising as "false, misleading, and reasonably likely to deceive the public." Consolidated Amended Complaint, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No.20. However, to plead that an

the *Twombly/Iqbal* plausibility standard, there was a “fatal flaw” in the allegations of the CAC: it did not allege that “experts in the field” were prepared to testify that, on the basis of the existing scientific evidence, any reasonable expert would conclude from the cited studies that glucosamine and chondroitin are ineffective in non-arthritic consumers.[67] The “mere existence of a ‘battle of the experts’” was not proof of falsity, but was rather to be “expected.”[68] The following excerpt from Judge Motz’s Memorandum Decision provides an important glimpse into the Court’s reasoning:

> Disagreements between experts, even under the ‘reasonable degree of scientific certainty’ standard, are to be expected. In my judgment, however, the fact that one set of experts may disagree with the opinions expressed by other qualified experts does not *ipso facto* establish any violation of the applicable consumer protection laws. If there are *experts who support* what defendants say in their advertisements, the advertisements are not false and misleading . . . unless the clinical trial relied upon by defendants was itself false and/or deceptive.[69]

In this passage, the Court referenced the “reasonable basis” standard that marketers must adhere to when preparing advertising claims (discussed later in Section III, *supra*). Stated briefly, if scientific evidence points in different directions, the reasonable basis standard will allow for inconsistent messaging. In a footnote to this excerpt, the Court addressed whether this is a burden of proof issue and concluded that it is not, based on the nature of the advertising claims in the case.[70] The Court contrasted the example to a product liability case, in which plaintiff must establish that a product is defective. There, Judge Motz said, it would be “entirely appropriate for a jury to decide the defect issue” based on expert testimony that, to a reasonable degree of scientific certainty, a product is defective.[71] This distinction

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advertisement is misleading, the allegation must be supported by evidence of consumer confusion. Since Plaintiffs did not provide any evidence of consumer confusion, the Court appropriately limited its analysis to a claim of literal falsity.

[67] Memorandum at 7, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 38.

[68] *Id*.

[69] *Id*. (emphasis added).

[70] *Id*. at n.2.

[71] *See id.*; *see also* Memorandum at 4 n.4, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51. The significance of this carve-out for advertising cases is discussed further in Part III, *supra*.

is enormously significant for procedural and substantive reasons, reserving for juries their fact-finder role beyond false advertising cases.

By granting the Plaintiffs leave to amend their complaint, Judge Motz offered Plaintiffs an opportunity to revive their claim for literal falsity. He specifically instructed that Plaintiffs must plead that the clinical trial relied on by GNC (1) did not exist at all, (2) exists but did not support any of GNC's representations about TriFlex, or (3) exists and supports the assertions on TriFlex Fast-Acting's bottle, but was not conducted in an appropriately scientific manner.[72] Only under such a pleading could the Court infer, on the face of the complaint, that the products are ineffective as to non-arthritic users. Otherwise, if at least one expert supported what GNC and Rite Aid said in their ads, the advertisements could not be false.[73] Plaintiffs could only file an amended complaint if they could do so in accordance with Fed. R. Civ. P. 11, which requires sufficient due diligence to avoid sanctions.[74] Absent such a pleading, Plaintiffs' claim of falsity would not be facially plausible.

Six days after the Motion to Dismiss was granted, GNC's counsel sent plaintiffs a letter contending that "qualified experts" support the TriFlex and Rite Aid products' claims.[75] Plaintiffs rejected the opportunity to amend, and instead filed a motion for reconsideration on the basis of the existing complaint.[76] Judge Motz

[72] Memorandum at 7, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 38. An obvious issue, then, becomes whether Plaintiffs could so allege without appropriate discovery. Judge Motz addressed this question in his second Memorandum Decision, denying the motion for reconsideration: "[I]f plaintiffs can specify discovery requests that would aid them in alleging the above facts, they should file a motion setting forth the discovery that they request. Presumably, however, if plaintiffs' experts are of the view that no reasonable expert would reach the conclusion reached by the expert upon whom defendant relies, they are already, by virtue of their asserted expertise, in possession of the relevant factual information." Memorandum at 5, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51.

[73] Memorandum at 4, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51.

[74] Memorandum at 8, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 38.

[75] Exhibit 1 to Plaintiffs' Memorandum of Law in Support of Motion to Correct Mistake of Law Pursuant to F.R.C.P. 60, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 44-1.

[76] *See* Plaintiffs' Motion to Correct Mistake of Law Pursuant to F.R.C.P. Rule 60, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 43; Plaintiffs' Memorandum of Law in Support of Motion to Correct Mistake of Law Pursuant to F.R.C.P. 60, In re GNC Corp. Triflex Prods.

denied the motion and reiterated the rationale presented in the Memorandum Decision. Regarding policy, he added one additional reason to his earlier holding: It would be unfair to consumers who wish to gamble on glucosamine and chondroitin if lay juries could effectively ban the sale (or artificially raise its pricing) simply because evidence of their effectiveness is inconclusive.[77] Plaintiffs appealed to the Fourth Circuit.

D. Plaintiffs' Appeal

After oral argument before a three-judge panel, the Fourth Circuit unanimously affirmed the District Court's decision in favor of GNC.[78] The Fourth Circuit inexplicably held that "plaintiffs must allege that all reasonable experts in the field agree that the representations are false."[79] In other words, a single expert in disagreement bars a statement from being literally false. In the Court's words:

> [I]n order to state a false advertising claim on a theory that representations have been proven false, plaintiffs must allege that all reasonable experts in the field agree that the representations are false. If plaintiffs cannot do so because the scientific evidence is equivocal, they have failed to plead that the representations based on this disputed scientific evidence are false.[80]

Under the Fourth Circuit's test, "the question of falsity hinges on the existence (or not) of scientific consensus."[81] Scientific experts may—and often do—disagree

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Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 44.

[77] Memorandum at 4, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51; *see also* Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505, 512 (4th Cir. 2015).

[78] There are some important differences between the District Court's Memorandum Decision and the Fourth Circuit's Order. First, the Court included alternative grounds for affirming the District Court, noting that Plaintiffs "failed to allege that <u>all</u> of the purportedly active ingredients in each product are ineffective at promoting joint comfort, health, and flexibility." Second, the Fourth Circuit disagreed with Judge Motz that specific formulations of the GNC and Rite Aid products needed to be tested to assess the truth of the labels' representations; instead, at the motion to dismiss stage, the scientific studies in the CAC could render the claim facially plausible. Lastly, the court found that the factual dispute regarding the effectiveness of glucosamine-chondroitin for non-arthritic users was not appropriate for resolution on a motion to dismiss. The Fourth Circuit declined to adopt the latter grounds for affirming the District Court's Order. *See* Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015).

[79] *See GNC*, 789 F.3d at 516.

[80] *Id*.

[81] *Id*. at 514 n.7.

about the truthfulness of a statement, but equivocalness is not falsity.[82] Regarding Plaintiffs' argument that a "battle of the experts" could not be resolved on the pleadings, the Court retorted:

> When litigants concede that some reasonable and duly qualified scientific experts agree with a scientific proposition, they cannot also argue that the proposition is 'literally false.' Either the experts supporting the Companies are unreasonable and unqualified (in which case, there is no real battle of the experts to begin with) or they reflect a reasonable difference of scientific opinion (in which case the challenged representations cannot be said to be literally false).[83]

Indeed, by characterizing the dispute as a "battle of the experts," the Court held that Plaintiffs (inadvertently) conceded that "a reasonable difference of scientific opinion exists as to whether glucosamine and chondroitin can provide the advertised joint health benefits."[84] The Fourth Circuit also responded to Plaintiffs' concern that manufacturers might hide behind so-called experts in proffering dubious marketing claims, relying on the Federal Rules of Evidence to ensure relevant and reliable scientific testimony.[85]

III
LEGAL AND POLICY CONSIDERATIONS

A. Law Professors' Amicus Brief, with Rebuttal

After the Circuit Court handed down its *GNC* decision, sixteen prominent law professors submitted an Amicus Brief for the Plaintiffs in support of rehearing.[86] The Amici describe their interest in the case as "promoting truth in advertising, which protects consumers and promotes fair competition."[87] In the eight-page brief, the law professors[88] supported Plaintiffs' petition for rehearing and criticized the Fourth

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[82] *See generally id*. at 515-16.

[83] *Id*. at 515.

[84] *Id*.

[85] *Id*.

[86] *See* Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants' Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment, Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015) (No. 14-1724) ECF No.45.

[87] *Id*. at 1.

[88] Professor Rebecca Tushnet, whose advertising textbook is extensively cited in this Note, appears to have been the lead academic on the Amicus Brief. It is co-signed with Brian Wolfman, then a Visiting Professor at Stanford Law School. Other Amici include Mark Lemley of Stanford Law School, Jessica Litman of the University of Michigan Law School, and Barton Beebe of New

Circuit's decision. The Amici argued that the Fourth Circuit "erred when it disregarded binding precedent" to produce a ruling with adverse procedural and substantive consequences. They further argued that questions of falsity cannot be resolved on the pleadings; instead, the fact finder (presumably a jury) should evaluate competing experts and pools of scientific evidence to determine the truth of a claim.

The brief is problematic in numerous respects. Specifically, the Amici (i) misstate the legal standards in falsity cases, (ii) misstate the nature of "binding" precedent, (iii) mischaracterize the nature of scientific evidence, and (iv) fail to appropriately consider the impact of the suggested alternative on jury instructions. This Note argues that the Amicus Brief, as well as the alternative outcome that Amici support, is a less persuasive answer to the truth-in-advertising dilemma presented by the *GNC* case. Instead, the Amici's criticism offers insight into the utility and *strengths* of the Fourth Circuit's logic. This section presents the Amici's arguments and responds to points addressed in their brief.

1. Inaccurate Legal Standards

The Amicus Brief begins with a "Summary of Argument" that describes the purported standard in literal falsity cases: "Literal falsity is about *how an advertisement is received by consumers*. The adjectives 'literal,' 'explicit,' and 'implicit' (and falsity 'by necessary implication') describe *consumer reaction* to a message, which is either *proved by evidence such as surveys* or presumed as a matter of law."[89] The italicized portions of this excerpt are problematic and, pun intended, literally false. First, literal and explicit claims are not assessed on the basis of consumer perception; rather they are accepted as literal messages. Second, literal and explicit claims are evaluated based on underlying substantiation, such as scientific testing, regardless of the message received by consumers. These important doctrinal and evidentiary distinctions are reviewed in Section I and, briefly, below.

York University School of Law, who supervised this Note's completion. Notably, Professor Eric Goldman of Santa Clara University School of Law is not a signatory to the Amicus Brief, although he co-authored the seminal textbook on advertising law, *Advertising & Marketing Law*, with Professor Tushnet.

[89] Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants' Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment at 1-2, Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015) (No. 14-1724) ECF No.45. The brief is inexplicably wrought with references to consumer messaging in literal falsity cases. As Amici later state, "To determine if an ad makes a false claim, a court must determine what message consumers will perceive . . . ."

As mentioned in Part I, *infra*, two modes of advertising are liable under Section 43(a): advertising that is false, and advertising that is misleading. Within the umbrella of false advertising, courts have generally recognized two types of falsity: (i) advertising that is literally false (based on a clear and explicit misrepresentation of fact), and (ii) advertising that is false by necessary implication (based on a claim that, considered in context, necessarily and unambiguously implies a message). Neither case requires surveys or other proof of consumer deception. Amici's emphasis on "consumer reaction to a message" and "surveys" is misplaced, as both of those issues are irrelevant to a finding of literal falsity.

Amici then describe an example of a potentially misleading representation: "Vitamin B7 can remedy hair loss." Since implied messages can convey multiple messages to the buying public, evidence of consumer confusion is required to determine which message consumers are receiving. While a discussion of misleading advertising can be helpful for comparison purposes, it is not relevant in the *GNC* case. First, the TriFlex claims at issue are literal and explicit: for example, "promotes joint mobility and flexibility" and "protects joints from wear and tear of exercise." Second, there was no survey evidence of the messaging received by consumers, which would be required to sustain a cause of action for misleading representations.[90]

There are subsequent discussions regarding advertising that is false by necessary implication.[91] While actionable, this mode of deception is also irrelevant to the *GNC* case. The claims at issue on the TriFlex label are clear and explicit. Advertisements that are false by necessary implication do not involve an explicit statement of fact, but rather an unambiguous assumption that follows from a claim. Consider a comparison to the claims at issue in *DIRECTV v. Time Warner Cable*, discussed in Part I.C., *infra*. In that case, the court considered other words and

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[90] Perhaps there is some suggestion that Plaintiffs' should have argued that the joint health claims were misleading, rather than literally false. The argument would appear to be that glucosamine-chondroitin is particularly attractive to osteoarthritis patients, who seek to alleviate the pain of their condition. Plaintiffs offered numerous studies that allegedly prove that glucosamine-chondroitin is not beneficial to osteoarthritis sufferers. On that basis, and with an allegation of consumer confusion, the claims could have been deemed misleading to a segment of consumers. However, a claim of misleading advertising would, too, seem to fail, as the District Court noted that "the TriFlex labels expressly disclaim any ability to 'diagnose, treat, cure, or prevent any disease." (citations omitted). In re GNC Corp. TriFlex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 at *3-4 (D. Md. June 20, 2014).

[91] Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants' Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment at 5, Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015) (No. 14-1724) ECF No.45.

images within the context of the statement that "settling for cable would be illogical;" the necessary implication was that settling for cable would be illogical because DIRECTV offers superior picture quality (it did not). The clear and explicit TriFlex claims simply do not fit into this category of consumer deception.

2. Misstatement of Precedent

The Amicus Brief continues with a citation to "binding precedent," namely *C.B. Fleet Co. v. SmithKline Beecham Consumer Healthcare, L.P.*, which the Fourth Circuit courts allegedly "disregarded" in dismissing the *GNC* case. In the opening paragraph of the Amicus Brief's "Argument," Amici state: "This Court has *repeatedly held* that both inquiries involve questions of fact. *C.B. Fleet Co. v. SmithKline Beecham Consumer Healthcare, L.P.*, 131 F.3d 430, 434 (4th Cir. 1997) ("Whether an advertisement is literally false is an issue of fact.")." This is both a mischaracterization of the holding as well as the case's precedential value.

Amici appropriately classify *C.B. Fleet* as a literal falsity case.[92] At issue were "improved design" and "comparative superiority" claims for SmithKline's new model of a feminine hygiene product. The Amici presumably provide this quotation in support of the alternative outcome they propose: factual disputes, such as a battle of the experts, should be reserved for juries. However, this proposition is conceptually distinct from the "issue of fact" identified by the *C.B. Fleet* Court. In *C.B. Fleet*, the Fourth Circuit was reviewing the district court's determinations of falsity on appeal; the quote provided by Amici stands for the proposition that district courts, in their fact-finding role, are given deference in reaching such conclusions.[93] Furthermore, there is a citation following the *C.B. Fleet* reference—omitted without acknowledgment in the Amicus Brief—to *L&F Prods. v. Procter & Gamble Co.*, 45 F.3d 709, 712 (2d Cir. 1995). That underlying authority from *L&F Products* states as follows: "The district court's determination with respect to facial falsity is a finding of fact which we review for clear error."[94] In both *C.B. Fleet* and *L&F*

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[92] *Id* at 2.

[93] In the discussion that follows that quote, the *C.B. Fleet Court* states: "Fleet challenges the district court's determinations of no literal falsity on the grounds that the court imposed upon Fleet a wrong–overly stringent–'burden of proof' on the issue, and, relatedly, that both of the *ultimate fact findings* were clearly erroneous[;]" "[W]e think that whether an advertising claim implicitly, though not expressly, asserts that it is test-validated must be considered a question of fact whose resolution is subject to clearly erroneous review[;]" "Our standard of review of district court fact findings is greatly deferential under controlling authority[]" (emphasis added). C.B. Fleet Co. v. SmithKline Beecham Consumer Healthcare, L.P., 131 F.3d 430, 434-436 (4th Cir. 1997).

[94] L&F Prods. v. Procter & Gamble Co., 45 F.3d 709, 712 (2d Cir. 1995).

Products, the "issue of fact" is raised with respect to the deference due to district courts, rather than juries' roles in resolving factual disputes.

In fact, the definition of falsity in *C.B. Fleet* does not conflict with the determination made in *GNC*. However, there remains a crucial factual difference between the cases. As the *GNC* Court noted, plaintiffs were given leave to amend the Consolidated Amended Complaint to plead that GNC's study (1) did not exist at all, (2) existed but did not support any of GNC's representations about TriFlex, or (3) existed and supported the assertions on TriFlex Fast-Acting's bottle, but was not conducted in an appropriately scientific manner. The Court specifically instructed that plaintiffs could not rely on the "vast weight of the evidence" to prove falsity. In *C.B. Fleet*, plaintiff met this burden, challenging the scientific reliability of SmithKline's testing procedures. In *GNC*, by contrast, plaintiffs twice relied on the "weight of the evidence" without attacking GNC's testing–even after a second bite at the apple.

Although the Amici state that the Fourth Circuit has "repeatedly held that [the falsity inquiry] involve[s] questions of fact," only *C.B. Fleet* is offered as support. One might reasonably expect a string cite supporting such an assertion. While the Fourth Circuit cemented a new rule for the meaning of literal falsity in supplement cases, its definition is hardly inconsistent with "binding" and "disregarded" precedent. In fact, the issue presented in *GNC* was a matter of first impression before the Court. While Amici's proposal is a permissible solution to the *GNC* question, it is neither required by precedent nor, as this Note argues, able to achieve a better outcome on policy grounds. The Fourth Circuit's ruling is a novel but befitting solution to truth-in-advertising questions in the dietary supplement industry.

3. The Nature of Scientific Evidence

The most persuasive portion of the Amicus Brief comes in the form of a hypothetical regarding the medical cause of ulcers. Amici present the following scenario: In 1910, a doctor would have said that stress and diet caused stomach ulcers, and that bacteria did not. We now know that this is untrue; the bacterium *H. pylori*—not stress and diet—causes many stomach ulcers.[95] The Amici use this illustration to argue that, despite expert support for a claim, it may be false. The fear is that corporate defendants may insulate themselves from lawsuits by hiding behind

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[95] Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants' Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment at 3, Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015) (No. 14-1724) ECF No.45.

one unreliable study. This illustration lends support to Amici's claim that experts are not infallible, and perhaps that juries serve as a valuable check on expert elitism.

Understood another way, the ulcer hypothesis could be marshaled in support of the Fourth Circuit's ruling. Indeed, scientific knowledge is always a work in progress, and our understanding of medical issues is constantly evolving in the face of new research and methodology. Consider an alternative analysis of the ulcer illustration. In 1910, the majority of doctors, based on our understanding of ulcers at the time, would have said that the claim that bacteria cause ulcers is literally false. In the decades that followed, medical explanation for ulcers changed in light of evolving research. By 1950, the weight of scientific evidence would indicate that bacteria do, in fact, cause ulcers. Today, it is scientific truth that *H. pylori* is the culprit behind stomach ulcers—a proposition that would have been literally false in 1910 if the "vast weight of scientific evidence" set the standard in falsity cases.

The point is that the minority opinion in a scientific debate may turn out to be correct. The *GNC* holding corrects for the mistaken understanding that a minority position is wrong simply because it is not supported by a majority of scientists at that time. In a 1910 jury trial, the jury would likely—and incorrectly—have discounted the minority position because it would not meet the preponderance of the evidence standard. Then, the question becomes, why should we let a jury decide such matters? In the ulcer case, how and why would a jury have reached a better result?

The Fourth Circuit recognized a key difference between claims that, in light of the existing scientific evidence, are inherently false, as opposed to claims that are reasonably debatable. The *GNC* standard is most receptive to the changing nature of scientific evidence and techniques. Until consensus among duly qualified and reasonable experts emerges around the veracity of a claim, it would simply be premature to rule out the minority opinion as false. The ulcer anecdote, perhaps inadvertently, stands for this proposition.

Amici would likely retort that the *GNC* rule too easily insulates corporate advertisers, hiding behind a single study, in literal falsity cases. However, as the *GNC* Court noted, plaintiffs remain protected due to the rules of evidence and by alternative causes of action. As Judge Floyd explained, "Plaintiffs remain protected from dubious experts by the Federal Rules of Evidence, which 'ensure that any and all scientific testimony…is not only relevant, but reliable.'" The importance of relevant and reliable scientific testing cannot be overstated, since plaintiff must prove that no reasonable scientific expert could find merit in the advertiser's claims. The Fourth Circuit is careful to rule out quackery as a source of substantiation. If no *reasonable* study exists in support of a proposition, then the plaintiff meets their burden of proof in literal falsity cases. Additionally, Judge Floyd noted that "[p]laintiffs who cannot meet the burden of proving literal falsity may avail themselves of a claim regarding misleading representations." This is helpful to plaintiffs who cannot or do not challenge the scientific legitimacy of a claim, but consider the messaging to consumers to be deceptive. Plaintiffs may then rely on survey evidence to establish consumer deception or confusion regarding an ad claim.

4. Jury Instructions

Finally, a crucial issue is not addressed in the Amicus Brief, but is relevant to the alternative outcome that Amici support: if the *GNC* case were assigned to a jury, what would the jury instructions look like? Juries undeniably serve an important fact-finding role in courtrooms across the United States, but play no part in the *GNC* story. Amici aptly draw attention to this procedural predicament, but serious questions remain if a panel of jurors would have reached a better outcome in the glucosamine case.

GNC is procedurally significant because the Court ruled, on a motion to dismiss, that a literal falsity case could be resolved on the pleadings. The Fourth Circuit articulated a very specific pleading standard with respect to plausibility in falsity cases. To recall, future plaintiffs must allege that no reasonable study (or scientist) exists or supports the challenged advertising claims; reliance on the so-called "vast weight of evidence" is insufficient to survive a motion to dismiss. In so ruling, the Fourth Circuit held that a jury would not resolve conflicting disagreements among experts.

One could say, as Plaintiffs argued, that a battle of opinions among qualified and competent experts creates a genuine issue of material fact, and that juries can handle highly technical scientific evidence. The involvement of juries seems even more urgent when considering the resource limitations of the FTC and FDA. *GNC*'s resolution at the plausibility stage usurped the jury of its central province,[96] and corporate defendants can more easily evade liability from the FTC, FDA, and courts alike.

While plaintiffs' argument prevails in principle, it has less purchase in practice. When there is reasonable evidence on both sides of a scientific controversy, why should six jurors decide if a product cannot be sold or advertised? Reserving judgment for juries beyond the pleadings stage would overestimate juries' abilities

[96] Plaintiffs' Reply Memorandum of Law in Further Support of Motion to Correct Mistake of Law Pursuant to F.R.C.P. 60 at 4, In re GNC Corp. TriFlex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.50.

to resolve highly technical scientific controversies. However, if plaintiffs plead issues related to the credibility or reliability of the defendant's studies (which the *GNC* plaintiffs did not), a jury's intervention seems far more befitting. In such case, if the evidence on one side is unreliable, there is no "battle of the experts" to begin with, and we can trust juries to side with the (only) party bearing substantiation. *GNC* preserves this crucial distinction beyond the pleadings stage.

Lastly, the *GNC* holding should be cabined to the dietary supplement area. Judges, academics (including Amici), and others would likely agree with this assertion. The *GNC* ruling does not rob the jury of its fact-finder role in cases involving product liability, wrongful death, and related matters. The District Court specifically addressed this concern, distinguishing the question in *GNC* from other burden of proof issues. In the words of Judge Motz:

> I have considered whether the issue is one of burden of proof, and I have concluded that it is not. Rather, the basis of my holding lies in the nature of the claims asserted by plaintiffs that rely upon the falsity, deceptiveness, or unfairness of defendants' advertisements. In contrast, for example, in a product liability case in which a plaintiff must establish that a product is defective, it would be entirely appropriate for the jury to decide the defect on the basis of expert testimony that, to a reasonable degree of scientific certainty, a product is defective.[97]

As is evident in the Court's language, the decision is meant to be narrowly construed, and this message appears to have been received by other courts. As of February 2018, the *GNC* holding has not been applied outside of advertising cases.

B. Additional Merits of the Fourth Circuit's Decision

There is useful criticism of the *GNC* ruling from Amici and others.[98] On the one hand, the *GNC* ruling seems like a massive victory for corporate defendants — and a massive loss for consumer plaintiffs—on both substantive and procedural grounds. *GNC* arguably imposes a high hurdle on consumer plaintiffs in literal falsity cases; without alleging perfect scientific consensus or attacking defendant's

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[97] Defendant's Memorandum in Support of its Motion to Dismiss Class Action Complaint at n.2, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014) ECF No.38.

[98] *See generally* Brief of Law Professors as Amici Curiae in Support of Plaintiffs-Appellants' Petition for Rehearing and for Rehearing En Banc, and in the Alternative, for Modification of Opinion and Judgment, Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505 (4th Cir. 2015) (No. 14-1724) ECF No.45; Olamide Orebamjo, Comment, *Brown v. GNC Corp.: The Fourth Circuit's New Standard for Literal Falsity*, 12 J. BUS. & TECH. L. PROXY 1 (2017).

study, plaintiff's case can no longer survive a motion to dismiss. But this is only part of the story.

Prior to the *GNC* decision, the question of what constituted false advertising during a period of scientific controversy was unanswered by the case law. Despite the prevailing criticism, the Fourth Circuit's position is a persuasive solution to a previously unresolved legal dilemma. The arguments that follow address the policy merits of the *GNC* standard for literal falsity in supplement cases. Specifically, this Section argues that (i) the Fourth Circuit's standard fits neatly into the patchwork of pre-existing consumer protection measures, namely those of the FTC and FDA, (ii) the decision promotes fair competition and preserves consumer choice, and (iii) the res judicata effect in these cases is limited, preserving opportunities for future plaintiffs to take a bite at the proverbial apple as scientific knowledge evolves.

1. FTC, FDA, and Fourth Circuit Parity

The falsity standard articulated in *GNC* is consistent with other consumer protection measures, namely, the FTC and FDA's approaches to truth-in-advertising. The Fourth Circuit's holding reflects the policy rationales underlying the FTC's prior substantiation doctrine and the FDA's disclosure regime. Both agencies, which are most directly involved in regulating consumer communications about supplements, would not take issue with the TriFlex ads.

Under the FTC's advertising standards, the TriFlex claims are truthfully advertised. The FTC's prior substantiation rule, discussed in Section I.B., states that an advertiser must have a "reasonable basis" for making objective claims and must "possess substantiation, prior to running the ad, for affirmative product claims."[99] GNC cited to a particular study in its possession on the bottle of one of the TriFlex products. Plaintiffs nowhere alleged that GNC did not have a reasonable basis for making the joint health improvement claims; they failed to allege this deficiency even after the District Court granted them leave to amend their complaint. While the FTC has investigated other glucosamine-chondroitin products, the author has no information indicating that the FTC acted (or would need to act) with respect to the TriFlex claims.

GNC was also compliant with the FDA's supplement labeling requirements, since each TriFlex label included the ingredients in each bottle, the standard disclaimer, and other required information. In broader perspective, the Fourth Circuit's ruling is consistent with the FDA's position on supplement labeling and advertising. Consider the evolution of the FDA's approach to regulating the

[99] *Pfizer*, 81 F.T.C. at 29 (1972).

supplement industry. The 1906 Federal Food and Drugs Act used the label as a tool to empower consumers to have a much better conception of what they were putting into their bodies. In the 1930s, the FDA confronted the question of allowable representations in the face of scientific uncertainty, further extending the "informative labeling" approach: representations could be made, even if not reflective of the consensus of scientific opinion, as long as there was reliable scientific basis behind them. In such cases, the statements would have to be qualified with a disclaimer that reliable scientific opinion differed on such claims.[100] The goal was to preserve freedom of consumer choice, with the agency's primary concern being the safety of the products. The Fourth Circuit's ruling follows the hands-off approach that the FDA has taken towards safe and properly labeled dietary supplements.

Sources of truth-in-advertising law are too numerous to recount here, but the Fourth Circuit's position achieves congruity across axes. Both the District Court and the Fourth Circuit interpreted the state consumer protection laws similarly; the fact that the laws come from different states is a distinction without a difference.[101] The overall objective of these statutes remains the same: protecting consumers from false and misleading advertising. It seems reasonable that a federal court seeking guidance on false advertising issues would look to the Lanham Act on regulating advertising and consumer communications. In view of these considerations, an ad that is false under the Lanham Act should likewise be deemed false under a state consumer deception statute. Furthermore, both industry and consumers benefit from consistent interpretations of state consumer protection statutes, which provide adequate notice to both parties about pleading requirements and possible defenses.

2. Fair Competition and Consumer Choice

Over the last decade, dozens of false advertising lawsuits have been brought against purveyors of glucosamine-chondroitin. The claims typically reflect the conventional wisdom about improving joint health and flexibility, just as GNC's TriFlex did. These cases across the United States are undoubtedly expensive for advertisers to defend. Ultimately, the price is borne by the consumer who continues to "gamble" on glucosamine because, in her subjective opinion, it works. Both *GNC* decisions consider this economic dimension, limiting litigation beyond the motion to dismiss stage for cases in which there are two legitimate medical understandings

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[100] John P. Swann, *The history of efforts to regulate dietary supplements in the USA*, 8 DRUG TESTING & ANALYSIS 271, 275 (2016).

[101] Brown v. GNC Corp. (In re GNC Corp.), 789 F.3d 505, 514 (4th Cir. 2015) ("In construing the diverse state statutes at issue here, we apply this broadly shared understanding of the difference between false and misleading representations.").

of a supplement's efficacy. Furthermore, from a policy perspective, it seems unadvisable to "put out of business" an approach for which there is a sound medical view.

As Judge Motz aptly noted in his Memorandum Decision, "It is unfair to consumers who wish to gamble that glucosamine and chondroitin may be effective if lay juries can effectively ban the sale of glucosamine and chondroitin simply because the evidence of their effectiveness is inconclusive." Satisfied consumers are free to purchase the products, and dissatisfied consumers are, of course, free to seek alternatives. Unlike drugs, which operate under completely different advertising standards, consumers are not required to take supplements. The perspective of jurors adds no value to this highly individual decision. The Court continued: "After all, damage awards and even the cost of defending against high stakes litigation has the effect of increasing the cost of glucosamine/chondroitin pills or, potentially, driving the pills from the market. Should those who choose to purchase the pills have to pay more for them (or be deprived of the opportunity to purchase them at all) when the science is uncertain merely because juries disagree with their own judgment about the pills' efficacy?"[102]

In addition to preserving consumer choice, the *GNC* ruling respects that whether the supplements work is an enormously subjective inquiry. In another case involving glucosamine-chondroitin products, the court neatly summarized the dilemma:

> The health and comfort of joints is probably influenced by a number of variables. Did [plaintiff] keep all of them constant, adjust for ones that can't be kept constant (like aging), and then somehow have her cartilage and joints examined? Did she keep precise records of how much [glucosamine-chondroitin] she took, why she took it, and just how long she took it for? Can she document what her physical condition was before and after she took [glucosamine-chondroitin]? Probably not. What's more likely is that she took [glucosamine-chondroitin] casually and just didn't feel much better, but that makes her own claims just as speculative as she alleges [the supplement's] benefits are.[103]

We could, as Amici argue, send these cases to juries and let them decide if the minority view does not hold water. But should we? The Court asked and answered

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[102] *See* Memorandum at 4 n.4, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51.

[103] Eckler v. Wal-Mart Stores, Inc., No. 12-727, 2012 WL 5382218, at *8 n.2 (S.D. Cal. 2012.

this very question, stating: juries serve as "a proper check on expert elitism. However, in this case the question is not whether the views of jurors should prevail over the views of asserted experts and judges. Rather the question is whether the views of jurors should prevail over the views of those who choose to purchase glucosamine/chondroitin pills. What is 'democratic' in one instance may be tyrannical in another. . . ."[104]

Finally, there is a hidden narrative beneath these lawsuits. At first glance, it may seem that consumers are fired up about wasting money on useless products. However, a closer look at the court dockets suggests an alternative story: many of the glucosamine-chondroitin lawsuits seem to be brought by the same lawyers, not consumers. Bonnett, Fairbourn and Denlea & Carton have been heavily involved in various glucosamine-chondroitin product lawsuits. The results have been lucrative for law firms. In the Plaintiffs' Memorandum supporting its Motion for Reconsideration, counsel noted "at least three nationwide settlements against manufacturers of similar joint relief supplements are in various stages of review."[105] Should law firms be able to line their pockets from consumers' purses? The FDA, FTC, state attorneys general, and corporate competitors are better safeguards of truth-in-advertising than plaintiffs' firms would care to admit.

3. Res Judicata Effects

Critics of the *GNC* ruling may rest assured that claim preclusion in false advertising cases is limited to the named plaintiff(s). The res judicata effect does not bind anyone to the result aside from the person or persons who brought the suit. If a party sued GNC for its TriFlex claims in Texas today, nothing is settled, and the court is well within its discretion to hear the case. It is particularly important to preserve these opportunities for litigation as scientific knowledge evolves and the conventional wisdom shifts.

On the other hand, the limits of the res judicata effects in these cases reveal a troubling pattern. As mentioned previously, there have been dozens of lawsuits across the United States involving glucosamine-chondroitin supplements, many of which were brought within the last ten years. These cases, which have not utilized the *GNC* pleading standard, have resulted in disparate verdicts and settlements. For example, the glucosamine-chondroitin cases in California have come out all over the

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[104] Memorandum at 4 n.4, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 51.

[105] Plaintiffs' Memorandum of Law in Support of Motion to Correct Mistake of Law Pursuant to F.R.C.P. 60, In re GNC Corp. Triflex Prods. Mktg. & Sales Practices Litig. (No. II), No. 14-2491, 2014 U.S. Dist. LEXIS 84184 (D. Md. June 20, 2014), ECF No. 44.

place: it is entirely possible that a Los Angeles jury would find the claims to be truthful, and a jury in San Francisco would deem them falsely advertised. As a result, glucosamine products may bear dissimilar advertising claims depending solely on the location where the product is purchased. This result seems arbitrary and premature, given the conflicting scientific evidence on the claims at issue.

CONCLUSION

During periods of scientific controversy, how should advertisers, regulators, and courts address truth-in-advertising dilemmas? As the *GNC* case has shown, this is a complex and interesting issue that is worth examining. The Fourth Circuit's answer to this question is a fair and reasonable standard, relying on expert consensus to establish literal falsity. While respected academics and courts have greeted the Fourth Circuit's ruling with caution, advertisers and consumers may be more satisfied with its outcome. Corporate defendants are once again reminded of the prior substantiation requirement in articulating advertising claims and can, with assurance, hang their hats on reasonable scientific testing. Consumers enjoy the continued availability of supplements that, in their subjective opinions, provide symptom relief – without paying for the extra costs associated with consumer class actions. Consumer plaintiffs are also given clear guidance on surviving a motion to dismiss, as the Fourth Circuit neatly articulated the pleading requirements in alleging literal falsity.

The novelty and significance of the *GNC* decision are only beginning to be understood, but it offers compelling policy advantages to proposed alternatives. The Fourth Circuit's ruling fits into the preexisting patchwork of consumer protection measures, announcing similar principles to the FTC's substantiation theory and the FDA's disclosure theory of liability. The solution is well suited to the nature of scientific evidence, which is continually changing in response to new research and technology. It is hard to argue that, if qualified scientists disagree about the efficacy of a dietary supplement, lay juries would achieve a better outcome in determining truth from falsity. Elevating the opinions of six jurors over experts and consumers does not provide any more certainty in arriving at the truthful result.

Questions remain about what impact, if any, the *GNC* decision should have on false advertising law. The author hopes that this unanimous decision by a panel of respected appellate judges will receive thoughtful consideration. In broader perspective, the standard does no damage to the existing falsity doctrines, and can be carefully confined to the dietary supplement space. The new standard articulated in *GNC* may seem like a big pill to swallow, but it is an effective remedy to the truth-in-advertising question that plagued the dietary supplementary industry.

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FIRESIDE CHAT WITH JUDGE PIERRE LEVAL OF THE UNITED STATES COURT OF APPEALS FOR THE SECOND CIRCUIT[1*]

This year's *New York University Journal of Intellectual Property & Entertainment Law* Symposium featured a fireside chat with Judge Pierre Leval of the United States Court of Appeals for the Second Circuit. The discussion, moderated by NYU Professor Christopher Sprigman, focused on the development of fair use doctrine in copyright law over the last thirty years. The discussion began with a few questions on Judge Leval's background in copyright law. Despite his authority on the subject today, Judge Leval did not take a single copyright course in law school. Nevertheless, he described becoming "overwhelmed" with copyright cases early on in his judicial career.

The discussion then shifted to fair use. The fair use doctrine, codified at § 107 of the Copyright Act,[2] permits limited use of copyrighted materials without acquiring permission from the copyright owner. While Judge Leval served on the U.S. District Court for the Southern District of New York in the 1980s, he authored three prominent fair use decisions. The works at issue in these cases were: a book publishing J.D. Salinger's previously unpublished letters,[3] a biography including several comments from the composer Igor Stravinsky,[4] and a biography with several

[1*] This brief article was written by Tatiana Fields and Evelina Yarmit. Tatiana and Evelina are second year law students at the New York University School of Law and staff editors for the *New York University Journal of Intellectual Property & Entertainment Law*.
[2] 17 U.S.C. § 107 (2010).
[3] Salinger v. Random House, Inc., 650 F. Supp. 413 (S.D.N.Y. 1986), *rev'd*, 811 F.2d 90 (2d Cir. 1987).
[4] Craft v. Kohler, 667 F. Supp. 120 (S.D.N.Y. 1987).

comments from L. Ron Hubbard.[5] Each of these cases helped to shape Judge Leval's ideas on restructuring fair use jurisprudence.

In the Salinger case, Judge Leval found fair use, but was reversed by the Court of Appeals for the Second Circuit.[6] This reversal prompted Judge Leval's realization that earlier fair use jurisprudence did not offer any consistently applicable standards, and this held true in his own opinion in the Salinger case. Judges were deciding fair use cases based on a gut feeling or an "I know it when I see it" standard. This variability in the law inspired Judge Leval to write an article for the Harvard Law Review in 1990 titled *Toward a Fair Use Standard*, which would precipitate a doctrinal shift towards a transformativeness standard for fair use in copyright.[7]

Taking the Salinger case as an example, in the context of written work, his test would consider whether quoted material is being used for a purpose different from the original or is merely recapturing the original's same objective—in other words, whether the use is transformative. Judge Leval's opinion is that fair use is closely linked to the dual purposes of copyright protection: (1) incentivizing authors by giving them the opportunity to make money through exclusive control over copies of their works; and (2) educating society. Therefore, the ideal zone to find fair use is where the taking of the original work serves a new and valuable purpose that contributes something novel to society without competing with the author's legitimate market.

The Supreme Court cemented Judge Leval's transformative use analysis into law in *Campbell v. Acuff-Rose Music, Inc.*, a copyright case holding that a commercial parody can qualify as fair use.[8] In the case, the band 2 Live Crew used a snippet of the song Pretty Woman to create a rap parody. Much to Judge Leval's delight, Justice Souter, writing for the majority, cited Judge Leval's 1990 article several times to describe the role of the transformative use analysis in a fair use determination.

Fair use law has come a long way in the past thirty years, with great help from Judge Leval's transformative use analysis. In discussing this concept, Judge Leval confessed that "transformative" is not a perfect term, but an attempt to whittle down a very complex analysis into a single standard. He expressed his qualms with

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[5] New Era Pubs. Int'l, ApS v. Henry Holt & Co., Inc., 695 F. Supp. 1493 (S.D.N.Y. 1988), *aff'd by*, 873 F.2d 576 (2d Cir. 1989), *reh'g denied*, 884 F.2d (1989), *cert. denied*, 493 U.S. 1094 (1990).

[6] Salinger v. Random House, Inc., 811 F.2d 90 (2d Cir. 1987).

[7] Pierre Leval, *Toward a Fair Use Standard*, 103 HARV. L. REV. 1105 (1990).

[8] Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569 (1994).

decisions that carry the transformative analysis too far by focusing too much on transformativeness to the exclusion of the traditional four-factor inquiry.

The discussion closed with the question of the role of judges in articulating copyright law. Judge Leval responded that although copyright is a creature of statute, judges have been very important in developing and expanding copyright through the common law process. The copyright statute flits back and forth between instances of Congress dictating general policy and detailed conditions. In Judge Leval's view, Congress wants courts to use a judicial understanding of common law copyright to rationally decide whether a use is fair. Congress does not want to define fair use, but, rather, respects courts' role in developing the doctrine.

During the question and answer session, Judge Leval heard from three students. The first probed him on the doctrinally irrelevant, yet still often used, arguments that a defendant made use of the copyrighted material in bad faith. In particular, the student asked for the Judge's opinion on the role of custom and good faith expectations in fair use. He answered that he believes that bad faith should play no role in fair use analysis, and judges should be able to make judgments based on how material was used, not how it was acquired. He likened the analysis to physical property law—looking at another's property with "bad thoughts" does not make someone a trespasser.

Another student asked how the transformativeness standard functions when analyzing appropriation art and what Judge Leval's opinion was on judges ordering the destruction of infringing art. While Judge Leval declined to answer the first part of the question because he anticipated reviewing similar cases on appeal, he expressed that he has long held that judges should not be hasty in handing out orders to destroy infringing materials. He hopes that these disputes do not have to reach the injunction stage and, instead, the two works can coexist by creating a compensation scheme for the original owner.

The final question dealt with copyright's role as an incentive for artists. The student questioned whether economic incentives were the true drivers behind artistic creation. While Judge Leval admitted that he could not attempt to explain exactly why artists create, he argued that copyright enables artists to make a living and feed their families by doing what they love.

Even as technology and case law continue to develop, it is clear Judge Leval's precedent and scholarship will endure with great impact. On behalf of the 2017–18 journal editors, we would like to sincerely thank Judge Leval and Professor Christopher Sprigman for participating in this year's symposium and engaging in this fascinating discussion of copyright law and the fair use doctrine.


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