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INNOVATION INC.

Stephanie Plamondon Bair†

ABSTRACT

Innovation is key to economic and social progress. Most innovation happens in companies, and most innovation scholars assume that market forces will lead companies to provide appropriate incentives—in the form of money and other perks—to their employees to encourage them to innovate at optimal levels. But this assumption about company behavior is almost certainly wrong. The truth is that different companies treat their employees very differently. Google offers free massages, while Amazon allegedly punishes people for taking sick leave. Genentech develops "cultural initiatives" that emphasize employees' shared goals, while Intermex fires people for uninstalling software that tracks their physical location 24/7.

If we assume that not all approaches to employee motivation are created equal when it comes to generating innovation, we can conclude that at least some, and perhaps many, companies are innovating at suboptimal levels. This is costly for society.

It is therefore critical from an innovation policy perspective to figure out what works and what does not. What kinds of environments, incentives, and managerial behaviors promote workplace creativity and innovation? And if we know what works, how can we make sure that companies are adopting effective approaches?

This Article tackles these questions. Drawing on empirical findings from psychology and organizational behavior, it identifies general principles that work to promote creativity in the workplace. The fact that many financially successful companies have failed to adopt these principles points to market failure, not market success, a conclusion bolstered by this Article's finding that several predicates of market failure exist in the employee creativity context.

Having undercut the conventional wisdom about private ordering, this Article goes on to explore what can be done to correct the market failure in employee innovation and ensure that more employees receive the right incentives. Here, behavioral law and economics offers a solution: debiasing. Debiasing uses interventions to overcome cognitive biases—

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in this case, on the part of company decision–makers. Changes to intellectual property law, employment law, and the implementation of signaling mechanisms like metrics and certification will debias company decision–makers and address the weaknesses of private ordering while maintaining its benefits. This will ensure that employees—the primary drivers of innovation today—receive the incentives they need to innovate at optimal levels.

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I. INTRODUCTION

Innovation drives economic and social progress. And today, companies drive most innovation.[1] But how do companies incentivize their employees to create? How should they? If policymakers and corporations seek to maximize innovation, these are critical questions. Yet law and innovation scholars have paid scant attention to them.

The conventional wisdom is that private ordering will provide the answers.[2] Companies will try varying combinations of financial and non–financial incentives to encourage their employees to innovate. If a particular company's incentive package produces suboptimal levels of employee creativity, the company will fail. If, on the other hand, a company properly calibrates incentives to create, innovation will surge and the company will flourish. In this way, the market will push toward optimal incentives.

The fact that equally successful companies often adopt wildly divergent approaches to promoting employee creativity is not necessarily a problem for those who subscribe to this conventional wisdom. It simply suggests that not every employee is spurred to creativity in the same way. An employee will choose to work for the company that motivates her, as an individual, to be her most creative. If a particular company does not satisfy this criterion for enough employees, it will not be able to attract and retain talent, and will fail. By promising success to companies that provide optimal innovation incentives and failure to those that do not, the market ensures that employees get what they need to achieve optimal creativity.

The tale of two of the most successful companies of our day, Amazon and Google, seems to bolster this account. Though both companies drive

1. *See, e.g.*, Jeanne C. Fromer, *Expressive Incentives in Intellectual Property*, 98 VA. L. REV. 1745, 1779–81 (2012) ("[F]irms today own most patents and most valuable copyrights . . . .").

2. *See, e.g.*, Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 HARV. J.L. TECH. 1, 38–40 (1999).

innovation, they take dramatically different approaches to motivating creativity. While Amazon uses hardline tactics, Google focuses instead on employee wellbeing.

In their New York Times exposé, Jodi Kantor and David Streitfeld describe the work environment at Amazon[3]:

> At Amazon, workers are encouraged to tear apart one another's ideas in meetings, toil long and late (emails arrive past midnight, followed by text messages asking why they were not answered), and [are] held to standards that the company boasts are "unreasonably high." The internal phone directory instructs colleagues on how to send secret feedback to one another's bosses. Employees say it is frequently used to sabotage others. . . . Some workers who suffered from cancer, miscarriages and other personal crises said they had been evaluated unfairly or edged out rather than given time to recover.

Amazon supporters maintain that its approach, though harsh, is critical for promoting innovation. As Amazon recruiter Susan Harker put it, "[Amazon] is a company that strives to do really big, innovative, groundbreaking things, and those things aren't easy . . . When you're shooting for the moon . . . the nature of the work is really challenging. For some people it doesn't work."[4] A new Amazon recruit similarly expressed his belief that "[c]onflict brings about innovation."[5]

Technology mammoth Google takes a completely different approach. Voted for the eighth time in eleven years as Fortune's number one company to work for,[6] Google offers a range of perks designed to help employees "[l]ive . . . healthy li[ves] . . . [e]njoy quality time . . . [g]ive back [to their communities] . . . [and] [s]upport [their] loved ones." [7] Google offers its employees extended paid parental leave, reimbursement for continuing education, and opportunities for extended unpaid leave with continuing

3. Jodi Kantor & David Streitfeld, *Inside Amazon: Wrestling Big Ideas in a Bruising Workplace*, N.Y. TIMES (Aug. 15, 2015), https://www.nytimes.com/2015/08/16/technology/inside-amazon-wrestling-big-ideas-in-a-bruising-workplace.html.

4. *Id.*

5. *Id.*

6. *100 Best Companies to Work For*, FORTUNE http://beta.fortune.com/best-companies/ (last visited Sept. 17, 2017).

7. *How We Care for Googlers*, GOOGLE, https://careers.google.com/how-we-care-for-googlers/ (last visited Sept. 17, 2017).

health benefits to participate in nonprofit or community–based projects.[8] And those are just the basic benefits. Quirkier offerings include subsidized massages, free yoga and Pilates classes, complimentary stress–management and health consultations, and even author appearances.[9]

Google supporters also firmly believe that theirs is the correct approach to fostering innovation. As spokesman Jordan Newman explained, Google's goal is to "create the happiest, most productive workplace in the world," and its incentive structure is a means to that end.[10] According to engineering director Craig Nevill-Manning, everything down to the design of Google's workspaces is "geared toward" promoting "innovation and collaboration."[11]

The fact that Amazon and Google have adopted such divergent approaches to promoting innovation—and yet are both so successful—is in line with the private ordering model the conventional wisdom endorses. Employees who expect to be more creative in an Amazonian environment will choose to work for Amazon, while those who expect to be more creative in a Googly environment will choose to work for Google. Everyone wins: employees, companies, and society.

But what if, despite Amazon's and Google's respective successes, this account is incorrect? What if Amazon's and Google's divergence is not the result of catering to creative idiosyncrasies, but the product of an as–yet–undetected market failure that prevents companies from adopting generally applicable principles of innovation? That is, what if, contrary to the conventional wisdom, companies like Amazon are successful not *because* they have adopted optimal innovation incentives, but *despite* not having done so?

These are important questions, but they have received little attention in the law and innovation literature. That is a mistake with significant individual and societal consequences. This Article seeks to correct that mistake by exploring whether markets generate optimal innovation incentives for employees, as is typically assumed, or whether market failures prevent optimal innovation incentives from taking hold. Moving beyond the conventional faith in markets, this Article draws on previously

8. *See id.*; *see also* Jillian D'Onfro & Kevin Smith, *Google Employees Reveal Their Favorite Perks about Working for the Company*, BUS. INSIDER (July 1, 2014, 10:06 PM), http://www.businessinsider.com/google-employees-favorite-perks-2014-7 (providing a link to a slide show listing Google employees' favorite perks).

9. James B. Stewart, *Looking for a Lesson in Google's Perks*, N.Y. TIMES (Mar. 15, 2013), http://www.nytimes.com/2013/03/16/business/at-google-a-place-to-work-and-play.html.

10. *Id.*

11. *Id.*

overlooked insights from psychology and organizational behavior suggesting that there are empirically tested principles and best practices that, if implemented, promise to promote creativity and innovation among employees.

Unfortunately, the market has failed to enshrine these principles. Two common features of market failure—bounded rationality, which arises from cognitive limitations of company decision–makers and leads to suboptimal behaviors, and information asymmetries, which result from companies having better information than potential employees—are likely at work here. These features help explain why at least some (and perhaps many) otherwise successful companies are getting employee creativity incentives wrong at least some (and perhaps much) of the time, leading to suboptimal levels of innovation.

In light of this previously undetected market failure, what is to be done? Those who value the conventional wisdom will appreciate that the answer is not to abandon private ordering entirely. Nevertheless, there are legal and policy interventions that can correct the market and ensure that more companies adopt more innovation–friendly incentives more often. These corrective interventions derive from the behavioral law and economics concept of debiasing: the process of correcting for cognitive biases and thereby helping corporate decision–makers adopt more innovation–friendly behaviors.

The rest of the Article proceeds as follows. Part II examines the case for private ordering as the best way to provide employees with creativity incentives. Despite the apparent strength of this case, Parts III and IV challenge the conventional wisdom that private ordering is currently working as it should to optimize innovation incentives.

This challenge proceeds on two fronts. First, Part III deploys insights from psychology and organizational behavior to demonstrate that there are several empirically–tested general principles that, when endorsed by companies, help promote creativity across subjects in the workplace. This Part contributes to the legal literature by establishing a framework by which law and innovation scholars may judge corporate policies and practices for their expected effects on innovation. But beyond this, and especially important for purposes of this Article, Part III demonstrates that there is likely a market failure in this context. To the extent that companies like Amazon do not align themselves with these principles, they are innovating at suboptimal levels.

Part IV takes a closer look at why this failure might be occurring, with the goal of developing an appropriate policy response. Relying on the body

of thought that informs the conventional wisdom—law and economics—this Part argues that several common but previously unrecognized circumstances that may undercut the effectiveness of markets are likely at play in the employee innovation context. In particular, this Part identifies bounded rationality, counterproductive social norms, information asymmetries, and distributional problems that may be leading to market failure.

Having argued that private ordering has failed to provide employees with optimal innovation incentives, Parts V and VI investigate what should be done. Part V revisits the case for private ordering and asks whether it is still the best approach in light of the analysis in Parts III and IV. This Part also introduces novel insights from psychology and organizational behavior to conclude that despite private ordering's weaknesses, it *is* the best approach—at least with certain corrective interventions. Part VI considers what these interventions should look like. This Part proposes a debiasing approach, based in the behavioral law and economics tradition, as the best way to preserve the benefits of private ordering while tackling its failures. Debiasing in this case can be achieved by modifications to existing intellectual property and employment law regimes and the implementation of formalized metrics and certification programs. These interventions should nudge companies in the direction of practices more conducive to creativity and innovation, benefitting employees, business, and society alike.

II. PROMOTING EMPLOYEE CREATIVITY: THE CONVENTIONAL WISDOM OF PRIVATE ORDERING

For innovation policy scholars, a fundamental task is determining how to best promote creativity and innovation. In undertaking this task, there are a number of policy levers at policymakers' disposal. The lever that has received the most attention is, unsurprisingly, intellectual property (IP), the very purpose of which is to provide innovation incentives to individual creators.[12]

12. *See* U.S. CONST. art. I, § 8, cl. 8 (empowering Congress to grant intellectual property rights in order to "promote the Progress of Science and useful Arts."); James M. Rice, *The Defensive Patent Playbook*, 30 BERKELEY TECH. L.J. 725, 725 (2015); Philip Merksamer, Ariosa Diagnostics v. Sequenom*: Metastasis of* Mayo *and* Myriad *and the Evisceration of Patent Eligibility for Molecular Diagnostics*, 31 BERKELEY TECH. L.J. 495, 525 (2016).

But when speaking about creativity incentives, many IP scholars tend to overlook two crucial interrelated facts. The first is that most innovation today is not accomplished by independent individuals responding to IP incentives, but rather by employees of companies and other organizations.[13] Second, under current intellectual property doctrines, these employees most likely will never hold a valid claim to exclusive rights in their work.[14]

Because IP offers little in the way of creativity incentives to employees, innovation scholars who have addressed the issue commonly assume that companies will provide optimal innovation incentives to their employees, primarily in the form of financial bonuses.[15] The theoretical basis for this assumption is that a private ordering scheme—which leaves companies to craft their own employee incentive policies according to existing norms, market forces, and firm needs—provides companies with sufficient motivation to give employees what they need to innovate at optimal levels. But as this Article explains in subsequent Parts, not much has been done to critically evaluate whether the private ordering model is working as expected in practice.

This Part examines the case for allowing companies to craft employee creativity incentives through private ordering. In this context, private ordering refers to behaviors governed by extra–legal considerations such as social norms, market forces, or party needs.[16] Private ordering stands in contrast to public ordering, which involves centralized rule–making by the state.[17] Both public and private ordering schemes are attempts to achieve

13. Fromer, *supra* note 1, at 1779–81; Jay Dratler, Jr., *Fixing Our Broken Patent System*, 14 MARQ. INTELL. PROP. L. REV. 47, 50 (2010); Stephanie Plamondon Bair, *The Psychology of Patent Protection*, 48 CONN. L. REV. 297, 330 (2015); Eric E. Johnson, *Intellectual Property and the Incentive Fallacy*, 39 FLA. ST. U. L. REV. 623, 661 (2012). The U.S. Patent and Trademark Office's records indicate that about 13% of all patented inventions originate from independent inventors. *Compare* U.S. PATENT AND TRADEMARK OFFICE, PATENT COUNTS BY CLASS BY YEAR—INDEPENDENT INVENTORS, JANUARY 1977–DECEMBER 2015 (2017), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cbcby_in.htm (listing 1,256,427 utility patents that were unassigned or assigned to an individual), *with* U.S. PATENT AND TRADEMARK OFFICE, PATENT COUNTS BY CLASS BY YEAR, JANUARY 1977–DECEMBER 2015 (2017), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cbcby.htm (listing 9,465,407 total utility patents in the same time period).

14. *See* Dratler, *supra* note 13, at 50.

15. *See, e.g.*, Merges, *supra* note 2, at 38–40.

16. For this and other definitions of "private ordering," see, for example, Niva Elkin-Koren, *Copyrights in Cyberspace—Rights Without Laws?*, 73 CHI.-KENT L. REV. 1155, 1160–61 (1998).

17. *Id.*

some desired public goal, like efficiency or rights protection,[18] but they employ different means to achieve these ends.[19] Here, the goal of private (or public) ordering is to achieve optimal innovation incentives for creative employees working in companies.

A. PRIVATE ORDERING AS DEFAULT

Others have written about the conditions that might lead us to favor either a private or public ordering regime in specific circumstances.[20] In the corporate law context, Robert Thompson and others have argued that private ordering is generally superior to public ordering, and should be the first mover for constraining human behavior.[21] Under this view, private ordering should be our default choice, and the law should step in only when certain conditions require it, or when law has an identifiable advantage over norms in regulating behavior.[22]

Following this logic, a primary consideration in deciding whether private ordering is the best course of action is whether we can expect to achieve the desired outcome without government intervention.[23] This could arise, for example, because market forces drive behaviors in beneficial ways.[24]

Here, we should expect employers to provide optimal innovation incentives to employees without government intervention. The reason for this expectation is simple: providing these incentives is good for companies' bottom line. It is almost a truism that innovation is related to, and necessary

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18. *See, e.g.*, Michael Birnhack, *Principles of Private Ordering,* ISRAELI INTERNET ASS'N (Feb. 2004), https://en.isoc.org.il/hasdara_eng/principle.html.

19. *See* Joseph Miller, *Taking Civil Rights Seriously: Toward a New Understanding of Section 1983*, 2 GEO. MASON U. CIV. RTS. L.J. 101, 102–03 (1991).

20. *See, e.g.*, Jonathan R. Macey, *Public and Private Ordering and the Production of Legitimate and Illegitimate Legal Rules*, 82 CORNELL L. REV. 1123 (1997) (arguing for a default preference for private ordering because private ordering can be expected to lead to legitimate rules, while public ordering may lead to either legitimate or illegitimate rules); Avery Katz, *Taking Private Ordering Seriously*, 144 U. PA. L. REV. 1745, 1749–53 (1996) (arguing that public ordering may be necessary because the social norms that drive private ordering are not fully efficient).

21. Robert B. Thompson, *Corporate Law Criteria: Law's Relation to Private Ordering*, 2 BERKELEY BUS. L.J. 95, 98–99 (2005); *see also* Macey, *supra* note 20.

22. *See* Thompson, *supra* note 21, at 98–99.

23. *See* Elkin-Koren, *supra* note 16, at 1160–61 (contrasting "public ordering", which relies on centralized institutions like the government to formulate rules, with "private ordering", where rules or norms are created "from the bottom up" in a variety of ways, including through market forces).

24. *See id.*

for, financial business success.[25] To the extent that employers provide effective innovation incentives to their employees, employees will be more innovative and, consequently, the companies will be more successful. Since few companies go into business with the goal of failing, they have every reason to adopt these incentives of their own accord.

B. PRIVATE ORDERING'S DESIRABILITY OVER IP

In the innovation context, an additional case for private ordering in governing employee creativity incentives comes from contrasting it with the primary alternative: IP rights, often considered the chief means of efficiently incentivizing innovation.[26] Under the traditional, utilitarian account of IP, exclusive rights are granted to creators to encourage them to create things that rational actors would not create otherwise for various reasons arising from the public-goods nature of intellectual products.[27]

But when it comes to incentivizing creators who are also employees, scholars have made the economic argument that intellectual property entitlements most efficiently reside with the creating company rather than with individual creators within the firm.[28] In essence, the argument goes, granting rights to the company, rather than fracturing rights among employees, allows for efficient coordination of effort and prevents individual employees from holding up the company, which in turn would lead to suboptimal levels of corporate investment in innovation.[29] Consistent with this reasoning, IP doctrines generally assign rights to

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25. *See, e.g.*, BRIAN TRACY, THE 100 ABSOLUTELY UNBREAKABLE LAWS OF BUSINESS SUCCESS 94–95 (2002).

26. *See*, *e.g.*, Michael Kremer & Heidi Williams, *Incentivizing Innovation: Adding to the Tool Kit*, 10 INNOVATION POL'Y & ECON. 1, 1 (2010) (considering intellectual property rights as one important means for promoting innovation); Jonathan M. Barnett, *Is Intellectual Property Trivial?*, 157 U. PA. L. REV. 1691, 1699 (2009) (stating that it is a "conventional proposition" that intellectual property rights result in "innovation gains"); Benjamin N. Roin, *Intellectual Property Versus Prizes: Reframing the Debate*, 81 U. CHI. L. REV. 999, 1001 (2014) ("The intellectual property system is a central [though controversial] component of innovation policy . . . . ").

27. *See* Mark A. Lemley, *Ex Ante versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 129–30 (2004) ("Because ideas are so easy to spread and so hard to control, only with difficulty may creators recoup their investment in creating the idea. As a result, absent intellectual property protection, most would prefer to copy rather than create ideas, and inefficiently few new ideas would be created."); William Fisher, *Theories of Intellectual Property*, *in* NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 168, 173–74 (Stephen R. Munzer ed., 2001).

28. *See, e.g.*, Merges, *supra* note 2, at 12.

29. *Id.* at 12–16.

creating companies rather than to creative employees.[30] For example, an employee whose on–the–job creative work leads to a patent cannot typically expect to receive any direct financial gain from her invention.[31] The supracompetitive returns that may accrue if the patent is successful will go to the company, not the inventor,[32] and there is no law requiring firms to share these profits with employee–creators.[33]

Because innovative efficiency counsels that IP rights go to employers, some scholars have argued that private ordering is the best alternative for providing creativity incentives to employees.[34] Supporting this argument, Rob Merges, details a variety of company–initiated programs that reward employees in various ways for their creative endeavors.[35] He argues that these programs should be successful in spurring employees to creativity.[36]

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30. *Id.* at 5–10.

31. Though she may stand to gain indirectly by enhancing the firm's financial position, which may lead to a bonus or pay raise. *See* Merges, *supra* note 2, at 37–44. *But see* Meredith Annan House, Marvel v. Kirby*: A Clash of Comic Book Titans in the Work Made For Hire Arena*, 30 BERKELEY TECH. L.J. 933, 934 (2015) (describing situations where an employee owns intellectual property in works created on the job); Diana C. Obradovich, Garcia v. Google*: Authorship in Copyright*, 31 BERKELEY TECH. L.J. 785, 790 (2016) (describing fracture of rights based on the work–for–hire doctrine); Robert M. Yeh, *The Public Paid for the Invention: Who Owns It?*, 27 BERKELEY TECH. L.J. 453, 462 (2012) ("According to the Supreme Court in *Dubilier*, a hired inventor can keep possession of his invention unless he has been hired to invent the very thing that he invented, in which case he is obligated to assign the invention to his employer.").

32. Dratler, *supra* note 13, at 50.

33. *See* Merges, *supra* note 2, at 5–10. Any direct financial benefit the employee may enjoy for her efforts will thus depend almost entirely on the firm's internal incentive structure. Many firms offer some form of financial reward to inventors. But this is entirely within the firm's discretion. *See id*. at 37–44.

34. Not all IP scholars feel this way. Several have argued that IP doctrines should be altered in such a way as to give employees greater rights in their creations. *See*, *e.g.*, Shlomit Yanisky Ravid, *Rethinking Innovation and Productivity Within the Workplace Amidst Economic Uncertainty*, 24 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 143, 190–91 (2013); Orly Lobel, *The New Cognitive Property: Human Capital Law and the Reach of Intellectual Property*, 93 TEX. L. REV. 789, 845–49 (2015); Ann Bartow, *Inventors of the World, Unite-A Call for Collective Action by Employee-Inventors*, 37 SANTA CLARA L. REV. 673, 697–99 (1997); Neal Orkin, *Rewarding Employee Invention: Time for Change*, HARV. BUS. REV., Jan.–Feb. 1984, at 56; William P. Hovell, Note, *Patent Ownership: An Employer's Rights to His Employee's Invention,* 58 NOTRE DAME L. REV. 863, 875–80 (1983); Henrik D. Parker, *Reform for Rights of Employed Inventors*, 57 S. CAL. L. REV. 603, 605, 624–25 (1984).

35. Merges, *supra* note 2, at 37–42.

36. *See id.* at 41 ("While it may come as no surprise to economists, personnel experts are discovering that [employee rewards programs] produce better [innovative] results.").

C. FLEXIBILITY AND FAMILIARITY

Those in favor of a private ordering scheme for providing employees with creativity incentives have also emphasized the interrelated advantages of familiarity and flexibility that this approach offers.

In contrast to a government entity, a company enjoys the relative advantage of familiarity with the technological space in which it operates, the company itself, and its employees.[37] It therefore presumably has superior knowledge about what programs and policies will be most effective and best fit the needs of the firm and its creative personnel.

Flexibility is an additional advantage related to familiarity. Choosing a private ordering rather than an intellectual property or regulatory regime gives firms the space to experiment with policies and practices that work with their unique circumstances.[38] If the market is functioning as expected, we need not fear that a company's particular practices are suboptimal from an innovation perspective. According to the logic described above, if this is the case, the market will weed it out: the company will innovate at suboptimal levels and will suffer economically as a result. The economic hardship will either drive the company out of business or compel it to move its practices in a more innovation–friendly direction.

The flexibility of private ordering also allows companies the space to accommodate idiosyncratic needs of employees. In contrast to a one–size–fits–all public approach, the expected result of private ordering is a range of companies offering unique incentive packages. This diversity enables potential employees to choose the company with the package that works best for their particular creative needs. Employees will "vote with their feet," leaving the companies that offer suboptimal packages and moving to those that offer better packages from their individual perspectives.[39] Companies will therefore be compelled to offer optimal innovation incentives so they can retain the best talent and continue to innovate.

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37. *Id.* at 45.
38. *See id.*
39. *See* Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416, 418 (1956).

III. A CRITICAL LOOK AT THE CONVENTIONAL WISDOM: INSIGHTS FROM PSYCHOLOGY THAT SUGGEST MARKET FAILURE

The case for private ordering as the best way to provide employees with innovation incentives makes a lot of intuitive sense. Perhaps that is why no one has made much of an effort to critically examine it.

Adding to this scholarly lacuna is the fact that these assumptions are difficult to test empirically. When we look at companies in the real world with different employee–incentive models, how can we know whether one model leads to more innovation than another? We could, of course, select a proxy for innovation (such as issued patents or new products on the market) and, controlling for myriad potential confounding factors, conduct an empirical study with the aim of arriving at the most effective employee–incentive model. It is much easier, however, to let the market, which we assume is working as anticipated, do the sorting for us.

But despite the appeal of private ordering, there are good reasons to ask whether market failures might be keeping it from functioning as expected in practice. First, we might question the main premise underlying this approach: if a firm is not innovative, it will either not survive, or, at the very least, underperform economically.

Though innovation is generally thought to contribute to a company's success,[40] it is by no means the *only* way to be successful. A particular company might have a business model that does not depend on ongoing innovation at all. The firm might instead prefer, for example, to put its resources into supporting the continued success of a few signature products, or it may specialize in rebranding the nonexclusively owned ideas and products of others. Companies may also be driven by "short–termism," preferring to maximize shareholder value in the short term rather than invest in innovative research and development projects that may not pay off economically for many years.[41] Bolstering the short–termism concern,

40. *See, e.g.*, Tracy, *supra* note 25, at 94–95.

41. *See, e.g.*, Linette Lopez, *American Companies Have Developed a Very Particular Disease-and CEOs Hate the Cure*, BUS. INSIDER (June 14, 2016), http://www.businessinsider.com/american-companies-and-short-termism-2016-6 (arguing that short–termism causes companies to neglect R&D); Roger L. Martin, *Yes, Short-Termism Really is a Problem*, HARV. BUS. REV. (Oct. 9, 2015), https://hbr.org/2015/10/yes-short-termism-really-is-a-problem (arguing that though R&D spending has increased recently, it may be because "corporations are careful to classify as much as possible as 'R&D' to avoid accusations of short-termism when they lower their overall investment"). *But see* James Surowiecki, *The Short-Termism Myth*, NEW YORKER (Aug. 24, 2015),

many U.S. companies have significantly decreased their research and development spending in recent years.[42] Clearly, these companies think that there are other ways besides innovation to achieve economic success. And though these are perfectly rational business decisions, they do not bode well for innovation, and belie the assumption that the market will push companies to provide optimal innovation incentives to their employees.

Similarly, the idea that employees will engage in Tiebout exit—leaving employers with suboptimal creativity–incentive packages for other jobs—though possibly correct, may simply be irrelevant to how some companies operate in practice. A given company might not be overly concerned about high employee turnover, especially if it is confident in its ability to recruit new talent. Indeed, there is evidence that this is the model Amazon adopts.[43] If this is the case, an employee—or even several employees—leaving because of suboptimal innovation incentives will likely have little effect on a company's decision to adopt different or better incentives.

These observations begin to hint at the notion that all may not be sunshine and rainbows in the world of employee innovation incentives. But, again, how can we test this? How do we know what works, and whether companies are adopting what works?

The next two Sections tackle these questions. This Section introduces insights from the psychology and organizational behavior literatures and reveals empirically–tested general principles that on the whole promise to promote employee creativity. To shed light on what employers optimally

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http://www.newyorker.com/magazine/2015/08/24/the-short-termism-myth (arguing that short–termism may not be as big a problem as commonly believed, and pointing out that overall R&D spending has increased in the last year).

42. *See, e.g.*, *The Changing Nature of U.S. Basic Research: Trends in Federal Spending*, STATE SCI. & TECH. INST. (May 21, 2015), http://ssti.org/blog/changing-nature-us-basic-research-trends-federal-spending ("[E]vidence suggests that American corporations are walking away from basic science"); John LaMattina, *Pharma R&D Cuts Hurting U.S. Competitive Standing*, FORBES (Jan. 3, 2014), http://www.forbes.com/sites/johnlamattina/2014/01/03/pharma-rd-cuts-hurting-u-s-competitive-standing/ (reporting a "$12.9 billion reduction in [the pharmaceutical] industry's investment in R&D" from 2007 to 2012); Martin, *supra* note 41.

43. According to the New York Times, the median employee tenure at Amazon is one year, and only 15% of Amazon employees have been with the company for more than five years. Kantor & Streitfeld, *supra* note 3. In the non–innovative industries, an example of this business model can be seen in the world of BigLaw, whose firms go to great lengths (through high salaries, summer recruiting programs, etc.) to recruit more new talent than can ultimately be retained.

should be doing, this Section examines some of these principles and how they relate to specific workplace policies.

The fact that these principles do exist, and that the people who have helped uncover them often lament the degree to which their recommendations are ignored in real–world corporate decision–making[44] supports the hypothesis of market failure in the realm of employee innovation incentives.

A. PRINCIPLES OF EMPLOYEE CREATIVITY

Psychologists and organizational behaviorists have been working for years to identify the dynamics that influence employee creativity. Drawing from this work, this Article identifies several broad principles found to be beneficial for creativity in the workplace. Although the results discussed here are based on population data (meaning that there will be some individual variation), they suggest that, on the whole, some things work better than others when it comes to promoting employee creativity. In particular, this Section explains how promoting social exchanges; supporting creator autonomy, competence, and relatedness; and providing opportunities for variety and balance are all effective drivers of corporate innovation.[45]

1. Social Versus Economic Exchanges

Organizational behaviorists have discovered that employees are more creative when they define their relationships with employers as social, rather than economic, exchanges.[46] While an economic exchange depends on a formal and highly specified quid pro quo relationship, a social exchange is much less formal. Social exchange relationships are defined by

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44. Kimberly D. Elsbach & Andrew B. Hargadon, *Enhancing Creativity Through "Mindless" Work: A Framework of Workday Design*, 17 ORG. SCI. 470, 470 (2006); *see also* Teresa Amabile, *How to Kill Creativity*, HARV. BUS. REV. (Sept.–Oct. 1998), https://hbr.org/1998/09/how-to-kill-creativity ("When I consider all the organizations I have studied and worked with over the past 22 years, there can be no doubt: creativity gets killed much more often than it gets supported.").

45. For a different but related take on the social science literature in the law and innovation context, see Betsy Rosenblatt, *Belonging as Intellectual Creation*, 82 MO. L. REV. 91 (2017) (arguing, on the basis of the literature, that it is often a desire for a sense of belonging, rather than legal exclusivity, that drives individuals to be creative).

46. *See, e.g.*, Jiing-Lih Farh, Phillip M. Podsakoff & Dennis W. Organ, *Accounting for Organizational Citizenship Behavior: Leader Fairness and Task Scope Versus Satisfaction*, 16 J. MGMT. 705, 705 (1990); Dennis W. Organ & Robert H. Moorman, *Fairness and Organizational Citizenship Behavior: What Are the Connections?*, 6 SOC. JUST. RES. 5, 5 (1993).

feelings of trust. A party to this kind of relationship need not spell out the details of every transaction in advance because she trusts that the other party will reciprocate her contributions in the long run.[47]

Comparing a typical interaction between close friends to a typical interaction between strangers illustrates the contrast between social and economic exchange regimes.[48] John may babysit for Shirley (social exchange) without worrying about getting paid, but he knows that when he next needs a ride to the airport, Shirley will oblige. On the other hand, if Shirley hired a stranger to babysit for her (economic exchange), she would be expected to pre–specify the terms of the arrangement, including dollars paid per hour, whether the sitter could eat the food in her refrigerator, and whether she would provide the sitter with a ride home. She would also be expected, absent some formal arrangement to the contrary, to pay the babysitter at the time services are rendered.

Just as Shirley and John's relationship allows them to give and take favors without a formal accounting or economic transaction, organizational studies suggest that certain managerial behaviors engender the kind of interpersonal trust between employer and employee necessary for social exchange. When this trust is present, employees feel comfortable going above and beyond with increased creativity and innovative behavior, knowing that they will eventually be rewarded in some way for their efforts.[49] Shirley, for instance, may be more willing to devote time and mental energy to complete a big project at her civil engineering firm if, during the previous week, her manager allowed her to leave early to see her daughter's recital. She may even be more creative in undertaking this project.

Although Shirley is a fictional character, her workplace behavior is not purely hypothetical. Research suggests that employees working in social exchange environments feel more motivated and engage in more innovation and idea generation than those working in economic exchange

47. Onne Janssen, *Job Demands, Perceptions of Effort-Reward Fairness and Innovative Work Behavior*, 73 J. OCCUPATIONAL & ORG. PSYCHOL. 289, 289–90 (2000).

48. *See* Eric E. Johnson, *The Economics and Sociality of Sharing Intellectual Property Rights*, 94 B.U. L. REV. 1935, 1954–55 (2014) (discussing similar examples in his treatment of "crisp" and "fuzzy" transactions; to relate the two, transactions taking place in a social exchange would tend to be "fuzzy," while those taking place in an economic exchange would tend to be "crisp").

49. Janssen, *supra* note 47, at 289–290.

environments.[50] Moreover, the quality of motivation experienced in these environments—so–called intrinsic motivation—may lead to objectively more creative output.[51] In contrast, employees working in economic exchange environments may perceive innovation as stressful, because it is demanding, and they may not feel adequately compensated for the additional efforts innovation requires.[52] Economic exchange environments thus tend to reduce employee motivation for innovative work.[53]

In addition to these creative benefits, social exchanges may also lead to more efficient workplaces due to reduced transaction costs. In general, social exchanges tend to lower transaction costs because every detail of the working relationship need not be formalized.[54] In the hypothetical situation just discussed, for instance, Shirley and her manager need not negotiate a formal agreement whereby Shirley works overtime hours in exchange for an afternoon off. Nor do Shirley and her manager need to keep an informal accounting of quid and quo. Instead, the give and take is a natural consequence of the type of relationship Shirley and her employer enjoy.

Consistent with the nature of the employer–employee relationship—a social relationship, built on trust—that characterizes a social exchange, the rewards employees expect and that contribute to the positive cycle of trust and motivation are not necessarily economic.[55] One of the main contributors to the creation of a social exchange at work is employees' perception that

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50. *See, e.g.*, Robert H. Moorman, *Relationship Between Organizational Justice and Organizational Citizenship Behaviors: Do Fairness Perceptions Influence Employee Citizenship?*, 76 J. APPLIED PSYCHOL. 845, 845 (1991); Organ & Moorman, *supra* note 46; Janssen, *supra* note 47.

51. Cindy P. Zapata-Phelan, Jason A. Colquitt, Brent A. Scott & Beth Livingston, *Procedural Justice, Interactional Justice, and Task Performance: The Mediating Role of Intrinsic Motivation*, 108 ORG. BEHAV. & DECISION PROCESSES 93, 93 (2009); Theresa Amabile, *The Motivation to be Creative*, *in* FRONTIERS OF CREATIVITY RESEARCH: BEYOND THE BASICS 223–54 (1987).

52. Onne Janssen, *How Fairness Perceptions Make Innovative Behavior More or Less Stressful*, 25 J. ORG. BEHAV. 201, 202–03 (2004).

53. *Id.* at 201 (concluding that employee perceptions of unfairness are related to higher stress in the workplace). As explained *supra* note 25, perceived fairness plays an important role in establishing a social exchange environment. *See generally* STRESS AND HUMAN PERFORMANCE (James E. Driskell & Eduardo Salas eds., 2013).

54. *See* Johnson, *supra* note 48, at 1954–55; Yochai Benkler, *Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production*, 114 YALE L.J. 273, 310–13 (2004).

55. The next two paragraphs are based substantially on Bair, *supra* note 13, at 338–39. I also discuss the fairness literature and its implications for copyright law in Stephanie Plamondon Bair, *Rational Faith: The Utility of Fairness in Copyright*, 97 B.U. L. REV. 1487 (2016).

the workplace is a fair environment.[56] Employers and managers can contribute to the perceived fairness of a work environment by allowing employees to participate in decision–making,[57] giving employees recognition and credit for their accomplishments,[58] making efforts to accommodate individual employees' needs and interests,[59] and generally treating employees with respect and dignity.[60]

This is not to say that economic compensation may not contribute to employee conceptions of workplace fairness. But it is clear that money is not a primary motivator of creative work, and can—if given too large a role—detract from employee motivation.[61] Further, when it comes to financial compensation, both employee and employer perceptions of what is "fair" do not follow a linear relationship between productivity and compensation. Instead, people tend to consider a compensation system fair when it provides "at least some minimal returns to every individual and does not result in outrageous variance across persons and identifiable groups."[62]

This latter finding belies many scholars' assumption that greater economic rewards lead, in a linear fashion, to greater incentives to innovate.[63] The research just described suggests that social exchange relationships are a primary motivator of innovation in the workplace and reward systems that compensate people in a linear pay–for–performance way may actually undermine creative motivation.

2. *Autonomy, Relatedness, and Competence*

Psychologists have long known the critical role that autonomy, relatedness, and competence play in promoting personal feelings of

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56. *See, e.g.*, Farh, Podsakoff & Organ, *supra* note 46, at 706–09; Organ & Moorman, *supra* note 46, at 5.

57. Organ & Moorman, *supra* note 46, at 14. *See generally* E. ALLAN LIND & TOM R. TYLER, THE SOCIAL PSYCHOLOGY OF PROCEDURAL JUSTICE (1988).

58. Janssen, *supra* note 47, at 291, 296.

59. Organ & Moorman, *supra* note 46, at 7.

60. *Id.* at 13; Moorman, *supra* note 50.

61. *See, e.g.*, JEROEN P.J. DE JONG, THE DECISION TO INNOVATE: LITERATURE AND PROPOSITIONS 29 (2006); Amabile, *supra* note 44.

62. Organ & Moorman, *supra* note 46, at 14–15; Philip Brickman, Robert Folger, Erica Goode & Yaacov Schul, *Microjustice and Macrojustice*, *in* THE JUSTICE MOTIVE IN SOCIAL BEHAVIOR 173–202 (1981).

63. This assumption is most often made in the intellectual property context, *see* Diane Leenheer Zimmerman, *Copyrights as Incentives: Did We Just Imagine That?*, 12 THEORETICAL INQUIRIES L. 29, 32–33 (2011), but has also been implied in legal scholarship discussing employee incentives in the workplace. *See, e.g.*, Merges, *supra* note 2, at 39–41.

wellbeing and mental health.[64] Additional empirical work suggests that these principles also contribute to motivation and creativity in the workplace.

a) Autonomy

Autonomy is the ability to choose one's goals and actions according to personal inclinations and interests.[65] People care deeply about the ability to exercise autonomy in their daily lives.[66] When people have occasion for autonomous thought and action, they feel happier[67] and enjoy higher quality relationships.[68] Opportunities for autonomous thought and action throughout their lifetimes help people develop into psychologically healthy and productive members of society.[69]

Attending to the human need for autonomy also has positive effects on innovation in the workplace. To the extent an employee can experience autonomy when undertaking a task, she will feel more motivated in her work.[70] Further, this creative impulse will exhibit the characteristics of high–quality intrinsic motivation,[71] a type of drive shown to lead to

64. *See infra* notes 65–69 and accompanying text.

65. Kennon M. Sheldon, Richard Ryan & Harry T. Reis, *What Makes for a Good Day? Competence and Autonomy in the Day and in the Person*, 22 PERSONALITY & SOC. PSYCHOL. BULL. 1270, 1271 (1996).

66. *See id.*

67. Harry T. Reis et al., *Daily Well–being: The Role of Autonomy, Competence, and Relatedness*, 26 SOC. PSYCHOL. BULL. 419, 419 (2000); Edward L. Deci & Richard M. Ryan, *The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior*, 11 PSYCHOL. INQUIRY 227, 227 (2000); Richard M. Ryan & Edward L. Deci, *On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well–being*, 52 ANN. REV. PSYCHOL. 141, 146–47 (2001).

68. Marc R. Blais et al., *Toward a Motivational Model of Couple Happiness*, 59 J. PERSONALITY & SOC. PSYCHOL. 1021–31 (1990); C. Raymond Knee et al., *Self-Determination and Conflict in Romantic Relationships*, 89 J. PERSONALITY & SOC. PSYCHOL. 997 (2005); Richard M. Ryan et al., *On the Interpersonal Regulation of Emotions: Emotional Reliance Across Gender, Relationships, and Cultures*, 12 PERS. REL. 145, 149 (2005).

69. *See* Reed W. Larson, *Toward a Psychology of Positive Youth Development*, 55 AM. PSYCHOL. 170, 170 (2000); Richard M. Ryan et al., *The Significance of Autonomy and Autonomy Support in Psychological Development and Psychopathology*, *in* DEVELOPMENTAL PSYCHOPATHOLOGY: THEORY AND METHOD 795, 802 (Dante Cicchetti & Donald J. Cohen eds., 2006).

70. Richard M. Ryan & Edward L. Deci, *Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being*, 55 AM. PSYCHOLOGIST 68, 71-73 (2000).

71. *Id.*

objectively more creative thinking (as measured by various experimental protocols) and better performance outcomes.[72]

It might seem counterintuitive that someone can feel autonomous when doing something that is externally prescribed, as is often the case when employees undertake creative projects at the direction and for the benefit of their employers. But psychologists have discovered that in the right environment, people will internalize externally regulated tasks.[73] This internalization leads employees to make a task—and the values it represents—their own, which in turn increases feelings of autonomy and creativity–enhancing intrinsic motivation.[74]

b) Relatedness

Humans are social animals who thrive in environments that allow them to form relationships with others. Social relationships help people live happier,[75] healthier,[76] and even longer[77] lives. Moreover, these relationships need not be particularly intimate to reap the rewards of sociality; even loose

72. *Id.*; Amabile, *supra* note 51, at 223–54; *see also* Teresa M. Amabile, *The Social Psychology of Creativity: A Componential Conceptualization*, 45 J. PERSONALITY & SOC. PSYCHOL. 357, 364 (1983) (finding that the positive effects of autonomy on motivation are strengthened when the task is a creative one); Marylene Gagne & Edward L. Deci, *Self-Determination Theory and Work Motivation*, 26 J. ORG. BEHAV. 331, 331 (2005) (finding that job motivation and performance are positively related to autonomy support by managers); Johnson, *supra* note 48, at 1959–60 (discussing some of Ryan and Deci's work).

73. Ryan & Deci, *supra* note 70, at 71–73.

74. *Id.*

75. *See, e.g.*, Ellen Berscheid & Harry T. Reis, *Interpersonal Attraction and Close Relationships*, *in* HANDBOOK OF SOCIAL PSYCHOLOGY (Susan T. Fiske, Daniel T. Gilbert, Gardner Lindzey & Elliott Aronson eds., 1998) (offering a review of the relevant literature); *see also* ANGUS CAMPBELL, PHILIP E. CONVERSE & WILLARD L. ROGERS, THE QUALITY OF AMERICAN LIFE: PERCEPTIONS, EVALUATIONS, AND SATISFACTIONS 321 (1976); Reed Larson & Mihaly Csikszentmihalyi, *The Experience Sampling Method*, 15 NEW DIRECTIONS METHODOLOGY SOC. & BEHAV. SCI. 41, 41 (1983); Reis et al., *supra* note 67, at 419; Wolfgang Stroebe & Margaret Stroebe, *The Social Psychology of Social Support*, *in* SOCIAL PSYCHOLOGY: HANDBOOK OF BASIC PRINCIPLES 597, 597 (E. Tory Higgins & Arie W. Kruglanski eds., 1996).

76. *See, e.g.*, Theresa E. Speeman, *Social Ties and Health: The Benefits of Social Integration*, 6 ANNALS EPIDEMIOLOGY 442, 449 (1996); David P. Spiegel, Sandra E. Sephton, Abba I. Terr & Daniel P. Stites, *Effects of Psychosocial Treatment in Prolonging Cancer Survival May be Mediated by Neuroimmune Pathways*, 840 ANNALS N.Y. ACAD. SCI. 647, 676–77 (1998); Sheldon Cohen et al., *Social Ties and Susceptibility to the Common Cold*, 277 JAMA 1940, 1940 (1997).

77. *See* Berscheid & Reis, *supra* note 75 (reviewing the relevant literature); Seeman, *supra* note 81, at 449; Spiegel et al., *supra* note 76, at 647 (1998).

social affiliations that do not provide emotional support—such as those that might form among acquaintances in the workplace—can be beneficial.[78]

Providing opportunities for relatedness in organizations also enhances motivation, productivity, and creativity.[79] When the need for relatedness is satisfied, people feel intrinsic motivation to engage in behaviors valued by others in the organization.[80] This motivation, in turn, leads to more creative thinking and outputs.[81] In the workplace setting, employees who enjoy a sense of relatedness perform better in their jobs than those who do not.[82]

c) Competence

People need to feel like they are good at something.[83] When people feel like they can accomplish something meaningful and challenging, and accomplish it well, they feel happier[84] and enjoy better mental health.[85]

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78. Stroebe & Stroebe, *supra* note 75.

79. Hedva Pernaski-Peretz, Gayly Binyamin & Abraham Carmeli, *Subjective Relational Experiences and Employee Innovative Behaviors in the Workplace*, 78 J. VOCATIONAL BEHAV. 290, 290 (2011); *see also* Richard M. Ryan, Jerome D. Stiller & John H. Lynch, *Representations of Relationships to Teachers, Parents, and Friends as Predictors of Academic Motivation and Self-Esteem*, 14 J. EARLY ADOLESCENCE 226, 226 (1994) (finding that children who had better connections with their parents and teachers more fully internalized school behaviors).

80. Ryan & Deci, *supra* note 70, at 73.

81. *See* Amabile, *supra* note 77, at 364; Gagne & Deci, *supra* note 77, at 331; Johnson, *supra* note 52, at 1959–60.

82. Paul P. Baard, Edward L. Deci & Richard M. Ryan, *Intrinsic Need Satisfaction: A Motivational Basis of Performance and Well–being in Two Work Settings*, 34 J. APPLIED SOC. PSYCHOL. 2045, 2046 (2004).

83. *See* Robert W. White, *Motivation Reconsidered: The Concept of Competence*, 66 PSYCHOL. REV. 297, 297 (1959).

84. Tim Kasser & Richard M. Ryan, *A Dark Side of the American Dream: Correlates of Financial Success as a Central Life Aspiration*, 65 J. PERSONALITY & SOC. PSYCHOL. 410, 410 (1993); Tim Kasser & Richard M. Ryan, *Further Examining the American Dream: Differential Correlates of Intrinsic and Extrinsic Goals*, 22 PERSONALITY & SOC. PSYCHOL. BULL. 208, 208 (1996); Kennon M. Sheldon & Tim Kasser, *Coherence and Congruence: Two Aspects of Personality Integration*, 68 J. PERSONALITY & SOC. PSYCHOL. 531, 531 (1995).

85. Ryan et al., *supra* note 69, at 832; *see also* Martin E.P. Seligman, Tayyab Rashid & Acacia C. Parks, *Positive Psychotherapy*, 61 AM. PSYCHOLOGIST 774, 776–77 (2006) (finding that interventions designed to increase feelings of competence reduced the severity of self–critical depression).

When people feel competent at what they do, they also experience enhanced intrinsic motivation and perform more competently.[86] It also leads them to exhibit more creativity in their work.[87]

3. Variety and Balance

Given the fact that humans have diverse psychological, emotional, and physical needs, some of which this Article has described, it is perhaps not surprising that balance and variety also have roles to play in welfare and innovation.

a) Balance

When people achieve an appropriate balance between work time and personal time, they feel happier.[88] This is particularly true if their personal time is used to satisfy personal needs like those for sociality and self-determination.[89] On the other hand, poor work–life balance is associated with lower satisfaction[90] and more physical health problems.[91]

Though the claim that employees who have better work–life balance also contribute more to organizational efficiency is perhaps

86. Gaëtan F. Losier & Robert J. Vallerand, *The Temporal Relationship Between Perceived Competence and Self-Determined Motivation*, 134 J. SOC. PSYCHOL. 801 (1994); Ryan & Deci, *supra* note 70, at 71, 73–74; Baard, Deci & Ryan, *supra* note 82, at 2061–62; *see also* Hyungshim Jang et al., *Can Self-Determination Theory Explain What Underlies the Productive, Satisfying Learning Experiences of Collectivistically Oriented Korean Students?*, 101 J. EDUC. PSYCHOL. 644, 644 (2009) (finding that feelings of competence are related to higher academic achievement in students).

87. *See supra* note 72.

88. *See, e.g.*, Kenneth M. Sheldon, Robert Cummins & Shanmukh Kamble, *Life Balance and Well–being: Testing a Novel and Conceptual Measurement Approach*, 78 J. PERSONALITY 1093 (2010); Peter Gröpel & Julius Kuhl, *Work-Life Balance and Subjective Well–being*: *The Mediating Role of Need Fulfilment*, 100 BRIT. J. PSYCHOL. 365, 365 (2009); *see also* Shobitha Poulose & Sudarsan N, *Work-Life Balance: A Conceptual Review*, 2 INT'L J. ADVANCES MGMT. & ECON. 1, 1 (2014) (reviewing some of the relevant literature). As the study by Sheldon and colleagues suggests, beneficial work–life "balance" can be defined either by an objective ("objectively equitable time use across multiple domains") or a subjective ("low subjective discrepancy between actual and ideal time-use profiles") standard.

89. Sheldon, Cummins & Kamble, *supra* note 88, at 1114.

90. Tim Kasser & Kennon M. Sheldon, *Time Affluence as a Path Toward Personal Happiness and Ethical Business Practice: Empirical Evidence from Four Studies*, 84 J. BUS. ETHICS 243, 243 (2009); Tim Kasser & Kirk Warren Brown, *On Time, Happiness, and Ecological Footprints*, *in* TAKE BACK YOUR TIME: FIGHTING OVERWORK AND TIME POVERTY IN AMERICA 107 (2003).

91. Thorsten Lunau et al., *A Balancing Act? Work-Life Balance, Health and Well–being in European Welfare States*, 24 EUR. J. PUB. HEALTH 422, 422 (2014).

counterintuitive—after all, these employees likely spend less time working than their less–balanced colleagues—the proposition is supported by a growing body of empirical data. These data suggest that work–life balance policies not only contribute to individual productivity,[92] but also lead to a range of other organizational benefits, including improved recruitment and retention, reduced absenteeism and sick leave, increases in employee satisfaction and loyalty, and improved corporate image.[93] Although the direct link between work–life balance and creativity has not been thoroughly explored, the evidence supporting the converse proposition—that a lack of balance leading to high workload pressure and overwork detracts from creativity—is robust.[94] Preliminary evidence also suggests that employees who rank their firms more highly for work–life balance also rank them highly for creativity and innovation.[95] Additionally, there are well–established correlations between work–life balance initiatives and higher employee engagement on the one hand and lower employee stress

92. SUSAN LEWIS & CARY L. COOPER, WORK-LIFE INTEGRATION: CASE STUDIES OF ORGANISATIONAL CHANGE xiv (2005). For literature reviews, see PHILIPPA YASBEK, THE BUSINESS CASE FOR FIRM-LEVEL WORK-LIFE BALANCE POLICIES: A REVIEW OF THE LITERATURE (2004) and FRED VAN DEUSEN ET AL., BUILDING THE BUSINESS CASE FOR WORK-LIFE PROGRAMS (2009). In a similar vein, a study sponsored by the World Economic Forum found that employees who rated their firms highly in terms of work–life balance policies also rated their firms as being more productive and more creative and innovative. These employees also reported feeling more engaged at work. WORLD ECON. FORUM, THE WELLNESS IMPERATIVE: CREATING MORE EFFECTIVE ORGANIZATIONS (2010), http://www.right.com/wps/wcm/connect/a2bd7426-4b2a-4af9-81ac-5211e83c72bb/the-wellness-imperative-creating-more-effective-organizations-world-economic-forum-in-partnership-with-right-management.pdf?MOD=AJPERES. *But see* Nick Bloom & John Van Reenen, *Management Practices, Work-Life Balance, and Productivity: A Review of some Recent Evidence*, 22 OXFORD REV. ECON. POL'Y 457, 457 (2006) (finding a significant positive relationship between productivity and work–life balance policies, but concluding that this disappears when good management practices—which are positively correlated with both work–life balance initiatives and productivity—are taken into account).

93. Yasbek, *supra* note 92.

94. *See* Elsbach & Hargadon, *supra* note 44, at 471–73 (reviewing the literature); Robert Rosenthal Kwall, *Remember the Sabbath Day and Enhance Your Creativity!*, 10 ST. THOMAS L. REV. 820, 820–21 (2013) (reviewing social science literature suggesting that a "break period," such as a day of rest, can be beneficial for creativity).

95. WORLD ECON. FORUM, *supra* note 92.

on the other,[96] two factors shown in other contexts to contribute to creativity.[97]

b) Variety

Empirical work also supports the old cliché that variety is the spice of life. Individuals who incorporate a variety of positive activities into their lives report greater improvements in well–being than those who introduce a less–varied set of positive activities into their daily routines.[98] And positive interventions such as exercise programs are more likely to contribute to sustained feelings of well–being if they consist of more varied experiences.[99]

Variety is thought to contribute to happiness because it has the power to combat the emotional adaptation that occurs when an activity or event—even an extremely pleasurable one—is experienced repeatedly.[100] You might love eating steak, for example, and experience a temporary boost in well–being while enjoying a steak dinner. But if you were to eat the same steak dinner for fifty nights consecutively, you would likely not get the same emotional boost from the dinner on night fifty you experienced on night one. Variety helps remedy this particular situation by introducing a range of additional dinner options to enjoy on nights two through forty–nine. When you have steak again after forty–eight nights without it, you will experience the same degree of pleasure you enjoyed the first time.

Just as variety in life experience can contribute to feelings of well–being, so too might variety at work contribute to increased satisfaction and creativity. First, well–being itself is positively correlated with the

96. LEWIS & COOPER, *supra* note 92, at xiv; WORLD ECON. FORUM, *supra* note 92; VAN DEUSEN ET AL., *supra* note 92; YASBEK, *supra* note 92.

97. For information on the relationship between stress and creativity, see STRESS AND HUMAN PERFORMANCE, *supra* note 53. For information on the relationship between engagement and creativity, see generally Amabile, *supra* note 51.

98. *See, e.g.*, Kennon M. Sheldon, Julia Boehm & Sonja Lyubomirsky, *Variety is the Spice of Happiness: The Hedonic Adaptation Prevention Model*, *in* OXFORD HANDBOOK OF HAPPINESS 901 (2012).

99. *See, e.g.*, Martyn Standage et al., *Perceived Variety, Psychological Needs Satisfaction and Exercise Related Well–being*, 29 PSYCHOL. & HEALTH 1044, 1044 (2014); Sonja Lyubomirsky & Kristin Layous, *How Do Simple Positive Activities Increase Well–being?*, 22 CURRENT DIRECTIONS PSYCHOL. SCI. 57, 58–59 (2013); *see also* Sonja Lyubomirsky, *Hedonic Adaptation to Positive and Negative Experiences*, *in* OXFORD HANDBOOK OF STRESS 200 (2011) (reviewing the relevant literature).

100. Sheldon, Boehm & Lyubomirsky, *supra* note 98, at 902–05.

generation of more creative ideas.[101] Second, individual task variety is associated with more active learning behaviors in the workplace.[102] And at least one study has found that professionals whose jobs require mastery of a variety of tasks exhibit more creative behaviors (such as idea generation) than those whose jobs involve less variety.[103]

B. MARKET FAILURE

The broad principles this Article identifies—social exchange; autonomy, competence, and relatedness; and variety and balance—can help evaluate how different companies are doing when it comes to providing their employees with appropriate incentives to innovate. Returning to the example of Amazon discussed in Part I, for instance, we can ask whether the company is correct that requiring long hours from its employees will reap productivity and innovation benefits. The answer, most likely, is no. On the other hand, programs like Google's that allow for more flexibility and time off are probably good for innovation.

Amazon is by no means the only company out there that has not gotten the proverbial memo about what actually motivates employees to be creative. In 2013, Yahoo announced that it was eliminating its remote work program, despite the fact that remote work is consistent with many of the creativity–enhancing principles just discussed. Additionally, company monitoring of employees (including their physical and virtual activities) is becoming more widespread,[104] despite the practice also being suspect in light of creativity researchers' findings. This Section examines how these common company practices are at odds with the empirical literature,

101. Sonja Lyubomirsky, Laura King & Ed Diener, *The Benefits of Frequent Positive Affect: Does Happiness Lead to Success?*, 131 PSYCHOL. BULL. 803, 825 (2005); *see also* Elsbach & Hargadon, *supra* note 44, at 473, 475–76 (discussing some of the relevant literature).

102. Heleen van Mierlo et al., *A Multi-level Meditation Model of the Relationships Between Team Autonomy, Individual Task Design, and Psychological Well–being*, 80 J. OCCUPATIONAL & ORG. PSYCHOL. 647, 647 (2007).

103. Luc Dorenbosch, Marloes L. van Engen & Marinus Verhagen, *On-the-Job Innovation: The Impact of Job Design and Human Resource Management through Production Ownership*, 14 CREATIVITY & INNOVATION MGMT. 129, 133–35 (2005); *see also* Elsbach & Hargadon, *supra* note 44, at 480 (describing additional studies that also suggest a link between task variety and creativity).

104. *See, e.g.*, Complaint for Damages at 3–4, Arias v. Intermex Wire Transfer, LLC (Cal. Super. Ct. May 5, 2015) (No. S1500CV284763), 2015 WL 2254833; *see also* David Kravets, *Worker Fired for Disabling GPS App that Tracked her 24 Hours a Day*, ARS TECHNICA (May 11, 2015, 9:41 AM), http://arstechnica.com/tech-policy/2015/05/worker-fired-for-disabling-gps-app-that-tracked-her-24-hours-a-day/.

suggesting that the market is not adequately moving these companies in welfare–promoting directions.

1. Amazonian Work Expectations

One of the more divisive questions relating to employee innovation is whether it is more effective to encourage long working hours, extended work weeks, and minimal time off (as Amazon does),[105] or to emphasize flexibility and work–life balance (as Google does).[106] Many companies share Amazon's view that seventy to eighty hours work–weeks are necessary for optimal productivity.[107]

It appears, however, that Amazon is taking the wrong approach, at least from an employee creativity perspective. Specifically, its methods are contrary to the creativity–enhancing principles of autonomy, competence, social exchange, and balance. A robust empirical consensus demonstrates that this approach also hurts productivity more generally.[108]

a) Autonomy and Competence

Employees are more motivated, and also more creative, when they feel autonomous and competent at work.[109] According to empirical work in this area, feelings of autonomy on the job are promoted by environments that emphasize a sense of choice, are free from excessive control, and do not pressure employees to think or act in particular ways.[110] Employees feel

105. Kantor & Streitfeld, *supra* note 3 ("Even many Amazonians who have worked on Wall Street and at start-ups say the workloads . . . can be extreme: marathon conference calls on Easter Sunday and Thanksgiving, criticism from bosses for spotty Internet access on vacation, and hours spent working at home most nights or weekends.").

106. Stewart, *supra* note 9 (quoting a Google employee who explained that she "came [to Google] from the New York agency model, where you work constantly, 24/7. [In contrast, at Google], you don't have to show you're working, or act like you're working. The culture here is to shut down on weekends. People have a life.").

107. *See* Sara Robinson, *Bring Back the 40-Hour Work Week*, SALON (Mar. 14, 2012, 5:00 AM), https://www.salon.com/2012/03/14/bring_back_the_40_hour_work_week/ (describing a currently widespread "churn'em and burn'em" corporate ethic that grew from the Silicon Valley culture in the 1980s).

108. *See, e.g.*, Sarah Green Carmichael, *The Research is Clear: Long Hours Backfire for People and for Companies*, HARV. BUS. REV. (Aug. 19, 2015), https://hbr.org/2015/08/the-research-is-clear-long-hours-backfire-for-people-and-for-companies (summarizing the relevant literature); Robinson, *supra* note 107 (same).

109. Ryan & Deci, *supra* note 67, at 71–73; Amabile, *supra* note 51, at 223–54 (describing the relationship between autonomy, competence, and creative motivation).

110. *See* Ryan & Deci, *supra* note 70, at 73–74; Julius Kuhl & Arno Fuhrmann, *Decomposing Self-Regulation and Self Control*, *in* MOTIVATION AND SELF-REGULATION ACROSS THE LIFE-SPAN 15–49 (1998); Edward L. Deci, Haleh Eghrari, Brian C. Patrick &

competent in the workplace when they receive helpful, non–controlling feedback,[111] the work environment is supportive rather than controlling,[112] and they feel that they can plan for success and have a reasonable degree of control over outcomes.[113]

Amazon's hardline approach to worker productivity is at odds with these findings. It is difficult to feel autonomy's sense of choice and freedom from excessive control when late–night emails not immediately acknowledged are "followed by text messages asking why they were not answered." [114] And it is difficult to feel competent when these controlling behaviors imply that one cannot be trusted to handle responsibilities in a timely and effective manner. These practices, though done in the name of promoting innovation,[115] are likely counterproductive to that end.

b) Social Exchange

Social exchange relationships in the workplace are promoted when managers give employees a say in decision–making,[116] try to accommodate individual employees' needs and interests,[117] and treat employees with respect and dignity.[118] Amazon's insistence on long hours, to the extent of pushing out employees with cancer or other personal issues,[119] shows an

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Dean R. Leone, *Facilitating Internalization: The Self-Determination Theory Perspective*, 62 J. PERSONALITY 119, 124–25, 139 (1994).

111. *See, e.g.*, Robert J. Vallerand & Greg Reid, *On the Relative Effects of Positive and Negative Verbal Feedback on Males' and Females' Intrinsic Motivation*, 20 CANADIAN J. BEHAV. SCI. 239, 240; *see also* Johnmarshall Reeve & Edward L. Deci, *Elements of the Competitive Situation that Affect Intrinsic Motivation*, 22 PERSONALITY & SOC. PSYCHOL. BULL. 24, 24 (1996) (finding that competition can increase perceived competence and also intrinsic motivation in part because of the competence feedback it provides).

112. *See* Ryan & Deci, *supra* note 70, at 74 (discussing competence in the educational context).

113. *See* Ellen Skinner & Teresa Greene, *Perceived Control: Engagement, Coping, and Development*, *in* 21ST CENTURY EDUCATION: A REFERENCE HANDBOOK (Thomas L. Good ed., 2008).

114. Kantor & Streitfeld, *supra* note 3.

115. *Id.*

116. *See* Organ & Moorman, *supra* note 46, at 13–14 (discussing how giving employees a "voice" in decision–making affects perceptions of fairness—a key contributor to a social exchange environment—in the workplace); Moorman, *supra* note 50, at 850 (listing the supervisor's consideration of an employee's viewpoint as a factor in determining employee perceptions of justice (fairness) in the workplace).

117. Organ & Moorman, *supra* note 46, at 7–9.

118. *See id.* at 11, 13, 14 (discussing how treating employees with dignity affects perceptions of fairness—a key contributor to a social exchange environment—in the workplace).

119. Kantor & Streitfeld, *supra* note 3.

unwillingness to accommodate individual needs, and is inconsistent with this creativity–promoting principle as well.

c) Balance

Perhaps the most obvious way in which Amazon's long–hours policy runs up against effective creativity incentives is through its detrimental effects on balance. When workers are unable to attend to fundamental personal and emotional needs for fear of losing status within the company or even their jobs,[120] they cannot achieve an appropriate work–

life balance, and their creativity will suffer.

d) Conclusion

Contrary to current common practice in the creative industries, the idea that companies will be more innovative when employees are encouraged to spend much of their personal time working is incorrect. Private ordering is not addressing this misconception by changing company practices, as it would if the market was functioning correctly.

2. Remote Work

With the rise of technologies making remote work more feasible, many firms have moved towards greater flexibility in allowing for these arrangements.[121] There are some notable exceptions, however, including the case of technology company Yahoo. When Marissa Mayer became the new CEO of the company in 2013, she issued a memorandum stating that employees would no longer be allowed to work remotely.[122] In the memo,

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120. *Id.*

121. *See* Scott Berkun, *Why Isn't Remote Work More Popular?*, SCOTTBERKUN.COM (Jan. 5, 2015), http://scottberkun.com/2015/why-isnt-remote-work-more-popular/ (citing data from the U.S. Census Bureau showing a 71% increase in number of employees working remotely in the computer, engineering, and science fields between 2000 and 2010, a 42% increase in the management, business, and financial sectors, and a 43% increase in the education, legal, community service, arts, and media fields). Berkun also cites data from the Survey of Income and Program Participation suggesting that 13.4 million out of 142 million employees across all sectors worked remotely some or all of the time in 2010, versus 9.2 million out of 132 million in 1997. *Id.*

122. Jenna Goudreau, *Back to the Stone Age? New Yahoo CEO Marissa Mayer Bans Working from Home,* FORBES (Feb. 25, 2013, 4:31 PM), http://www.forbes.com/sites/jennagoudreau/2013/02/25/back-to-the-stone-age-new-yahoo-ceo-marissa-mayer-bans-working-from-home/. Best Buy has also backed away from a previous attempt to create more flexible work arrangements. Ann Bednarz, *Best Buy Cancels Telework Program*, NETWORK WORLD (Mar. 5 2013, 2:33 PM), http://www.networkworld.com/article/2164133/infrastructure-management/best-buy-cancels-telework-program.html.

Mayer expressed her belief that communication and collaboration are enhanced when employees work "side-by-side" in the literal, physical sense.[123] She also opined that "speed and quality are often sacrificed when [employees] work from home."[124]

Like Mayer, many companies reject remote working arrangements over concerns about worker productivity.[125] These firms worry that if they allow workers to set their own hours or to work from home, employees will work fewer hours, shirk their responsibilities, and generally be less productive.[126]

An examination of the empirically–identified principles of creativity, however, belies the worries of companies that require face time in an effort to avoid shirking.

a) Autonomy, Competence, and Relatedness

Consistent with the principles of autonomy and competence, allowing workers to choose when and how they will get their work done gives them a sense of control and choice, not only over their work, but over their lives as a whole. Remote work policies also send a clear and positive competence message to employees: we trust your judgment, professionalism, and ability to finish your work in the manner and location you see fit.

Further, the intuition of Marissa Mayer and others that remote work arrangements will lead to shirking may be largely unfounded. Consistent with the above analysis, preliminary empirical evidence looking specifically at the effect of remote work policies on productivity suggests that these policies may help employees to be *more* productive. One study of Chinese employees found that remote work led to a 13% increase in

123. Goudreau, *supra* note 122.

124. *Id.*

125. *See* Edward E. Lawler III, *Remote Working: Who's Right?* FORBES (May 15, 2013, 4:02 PM), http://www.forbes.com/sites/edwardlawler/2013/05/15/remote-working-whos-right/ ("The simple fact of the matter is that often a major reason or the major reason for bringing an individual to a work location with a supervisor present is to control their performance.").

126. *See id.*; David Sturt & Todd Nordstrom, *Working Remotely: Does the Research Prove It Won't Work For You?*, FORBES (May 14, 2014, 11:15 AM), www.forbes.com/sites/davidsturt/2014/05/14/working-remotely-does-the-research-prove-it-wont-work-for-you/2/ (arguing that "people who want to work remotely simply because they don't like being micromanaged probably aren't the best candidates" for remote work, because they are more likely to shirk responsibilities).

productivity.[127] And a Gallup poll found that remote workers report longer hours and more engagement than their non-remote counterparts.[128]

The idea is that employees who have a sense of control over their work lives work because they want to, not because they are forced to—and they end up working more, and more productively. As the New York Times piece on Google, a company that encourages flexible and remote work arrangements, explained:

> [I]t's hardly necessary [for Google] to require employees to be at the office. "People want to come in," Ms. Mooney [an employee] said. On average, she estimates she spends nine hours a day there, five days a week. She mentioned that she recently took a day off—and ended up at the office.[129]

On the other hand, there may be something to Mayer's instinct that "side-by-side" work is good for creativity. Her idea touches on the creativity–enhancing principle of relatedness—the sense of connectedness and shared purpose employees feel with their coworkers.[130] Intuitively, we

127. Nicholas Bloom et al., *Does Working from Home Work? Evidence from a Chinese Experiment,* 130 Q. J. ECON. 165 (2014) (explaining that the increase was partly attributable to more time worked and partly attributable to more productivity during the time worked, due to reduced distractions).

128. *Remote Workers Log More Hours and Are Slightly More Engaged*, GALLUP (July 12, 2013), http://www.gallup.com/opinion/gallup/170669/remote-workers-log-hours-slightly-engaged.aspx. Of course, one can find counterexamples. *See, e.g.*, Lisa Rein, *Patent Office Filters Out Worst Telework Abuses in Report to Its Watchdog*, WASH. POST (Aug. 10, 2014), https://www.washingtonpost.com/politics/patent-office-filters-out-worst-telework-abuses-in-report-to-watchdog/2014/08/10/cd5f442e-1e4d-11e4-82f9-2cd6fa8da5c4_story.html (detailing allegations of widespread abuse of the remote work program by U.S. patent office workers, including employees logging hours that were not actually worked and rushing to complete work by a deadline rather than maintaining a semi–consistent schedule); Michael D. Frakes & Melissa Wasserman, *Procrastination in the Workplace: Evidence from the U.S. Patent Office* 3 (Duke Law Sch. Pub. Law & Legal Theory Series, No. 2017-15, 2016) (finding that patent examiners working remotely systematically "end-loaded" their workload, leading to lower quality work product). The lesson to be learned from these examples is not necessarily that remote work is bad for productivity, but instead that remote work programs should be administered in a sensible way that gives workers flexibility but maintains engagement and at least a minimal accountability. The Washington Post story, for example, quotes a report concluding that "[c]ontrols [on remote work] are almost non-existent" at the patent office and that "[e]xaminers can work inconsistently throughout the year, and even fail to be present at work, with little or no consequences." Rein, *supra* note 128.

129. Stewart, *supra* note 9.

130. Ryan & Deci, *supra* note 70, at 73.

might assume that it is more difficult for employees to experience relatedness when neither they nor their coworkers are in the office much.[131]

But though feelings of relatedness may be more difficult to cultivate in firms that have liberal remote work policies, it is not necessarily an insurmountable task. Feelings of relatedness grow when employees experience mutual respect and reliance[132] and understand that they are working together toward the same meaningful goals.[133] Though it might take more thought on the part of employers, it is certainly possible to promote these conditions even in environments where employees are often away from the office.[134] Conversely, relatedness is not necessarily promoted simply by requiring employees to be in the office at certain times, as Amazon's divisive work environment demonstrates. It is possible, then, to develop remote work protocols that promote relatedness—for example, arrangements where employees have flexible schedules overall but meet as teams periodically to develop relationships and discuss common goals—just as it is possible to have face–time–centered work arrangements that do not emphasize employee relationships and therefore do not promote relatedness.

b) Social Exchange

Remote arrangements also contribute to work environments that function as social exchanges. Remote arrangements give employees a say in where their work is accomplished and conveys the message that the employer cares about and wishes to accommodate employees' particular needs. The trust implied by remote work policies also contributes to a sense of respect and dignity[135] among workers.

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131. *See* Lawler, *supra* note 125 ("Creativity and the sharing of information is often lost when people work independently because they are not stimulated and informed by social interaction.")

132. Baard, Deci & Ryan, *supra* note 82; Roy F. Baumeister & Mark R. Leary, *The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation*, 117 PSYCHOL. BULL. 497 (1995).

133. Amabile, *supra* note 44.

134. Technologies like Skype and Jabber that allow for remote videoconferencing might be helpful in this respect. *See* Goudreau, *supra* note 122 ("With increasingly effective mobile and video conferencing technology there's less and less need to be present in the physical workplace.").

135. *See* Organ & Moorman, *supra* note 46, at 14–15 (discussing how respect and dignity are crucial to perceptions of fairness in the workplace, which in turn are critical for the formation of social exchanges).

c) Variety and Balance

Employees who are given the option of remote work are better able to achieve balanced work lives, resulting in higher creativity. When a firm approaches work–life issues in a way that suggests concord between "work" and "life" rather than an either–or relationship, creativity benefits.[136] Remote work policies convey the message that a firm cares about work–life harmony, and actively makes it easier for employees to achieve this balance.

Variety in workload, including time spent on "mindless" tasks, also contributes to creativity and may be more easily achieved in the context of remote and flexible work arrangements.[137] Employees can self–regulate in this respect by taking time away from high–cognitive–load tasks for either less cognitively challenging responsibilities or even activities, like general reading, that offer no immediately foreseeable contribution to the task at hand. While employees might feel uncomfortable self–regulating their cognitive loads by breaking up cognitively challenging work with mindless and non–goal–directed tasks in the office setting, it may be easier for them to do so while working remotely, where there is less worry about being monitored.[138]

Remote work arrangements can also naturally inject needed variety. An employee who works nine hours total on a challenging project, but breaks up his day with trips to pick up children or attend to other personal needs, may be less prone to creativity–killing burnout than the employee who attempts to finish the project in a single nine–hour sitting in the office.

The variety in, and control over, physical work environment that remote work policies encourage is likely also beneficial. Empirical work shows that employees who have greater control over their physical work environments

136. He Lu Calvin Ong & Senthu Jeyaraj, *Work-Life Interventions: Differences Between Work-Life Balance and Work-Life Harmony and Its Impact on Creativity at Work*, 4 SAGE OPEN 1, 1 (2014).

137. *See* Elsbach & Hargadon, *supra* note 44, at 471–73, 76–77.

138. Ironically, many firms balk at remote and flexible work arrangements precisely because they allow employees to engage in this type of self–regulation. *See, e.g.*, Lawler, *supra* note 125 (noting that one of the potential drawbacks of remote work is the lessened ability to control employees' performance); Nicole Fallon, *Does Working from Home Make Teams More Innovative?*, BUS. NEWS DAILY (Nov. 7, 2014, 12:59 PM) www.businessnewsdaily.com/7427-remote-work-innovation.html (suggesting that one reason why more firms do not allow their employees to work remotely is lack of trust). These firms improperly view this type of behavior as shirking and do not understand that it benefits productivity and creativity.

report greater job satisfaction and demonstrate higher productivity.[139] Changing one's physical environment periodically is also associated with greater creativity.[140]

d) Conclusion

The analysis above suggests that remote work implicates issues of autonomy, competence, social exchange, balance, and variety in ways that enhance creativity. Conversely, we can expect that limiting opportunities for remote work will limit opportunities for creativity accordingly. To the extent the market is failing to overcome companies' misconceptions about remote work, it is also failing to provide optimal creativity incentives.

3. The Stealthy Rise of Employee Monitoring

Technological advances make it easy and potentially desirable for employers to track both the physical locations and virtual activities of their employees. Though it is hard to find any particular company that will admit to monitoring its employees, anecdotal evidence, as well as the success of companies who offer monitoring software products, suggest that monitoring is becoming the norm rather than the exception in many professional industries.[141]

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139. So Young Lee & Jay L. Brand, *Effects of Control over Office Workspace on Perceptions of the Work Environment and Work Outcomes,* 25 J. ENVTL. PSYCHOL. 323, 330 (2005); *see* Kimberly D. Elsbach & Michael G. Pratt, *The Physical Environment in Organizations*, 4 ACAD. MGMT. ANNALS 181, 195–96 (2007). Elsbach and Pratt also describe potential downsides to employee control over physical work environment. *Id.* A relevant risk is that offering this control might lead to increased feelings of pressure to perform, which in turn, decreases actual performance. One way to address this risk is for firms to treat flexible and remote work arrangements as commonplace and not as a "special privilege" that employees must earn.

140. Elsbach & Pratt, *supra* note 139, at 203–04; *see also We're Not taking Enough Lunch Breaks. Why That's Bad for Business*, NPR (Mar. 5, 2015, 10:47 AM), http://www.npr.org/sections/thesalt/2015/03/05/390726886/were-not-taking-enough-lunch-breaks-why-thats-bad-for-business. Natural work environments may also have their drawbacks. In particular, a nature poster hung in an area where employees were engaged in a stressful task increased depression. This may be because it emphasized the contrast between the positive feelings associated with nature and the stressful nature of the task. Elsbach & Pratt, *supra* note 139, at 204–05.

141. *See, e.g.*, Parmy Olson, *More Bosses Expected to Track their Staff Through Wearables in the Next 5 Years*, FORBES (June 1, 2015, 7:47 AM) http://www.forbes.com/sites/parmyolson/2015/06/01/wearables-employee-tracking/; Dune Lawrence, *Companies Are Tracking Employees to Nab Traitors*, BLOOMBERG BUSINESSWEEK (Mar. 12, 2015, 6:00 AM), http://www.bloomberg.com/news/articles/2015-03-12/companies-are-tracking-employees-to-nab-traitors; Kevin Dugan, *Wall Street Banks Are Tracking Everything Employees Do*, N.Y. POST (Sept. 27, 2015, 8:30 PM), http://nypost.com/2015/09/27/wall-

Akin to the instinct of firms that oppose remote work, a big reason many companies and managers support employee tracking is the perception that it will enhance productivity and prevent shirking. A business–oriented blog, for instance, offers "8 Compelling Reasons Why Businesses Should Track their Employees' Time."[142] The reasons listed include "help[ing] employees avoid interruptions" and "[i]mprov[ing] your employees' productivity."[143] As one company that offers tracking software puts it:

> In today's economy, efficiency and productivity are more important than ever . . . What employer wouldn't want to know exactly where their employees are during the workday? . . . If your employees have [smartphones, our product] allows you to monitor their whereabouts at all times. This certainly makes supervising a lot easier, improves time management, and enhances productivity.[144]

Tracking may indeed make "supervising a lot easier," but it is not clear that monitoring employees is beneficial from an innovation perspective. Indeed, monitoring runs up against many of the creativity–enhancing principles that this Article identifies.

a) Autonomy and Competence

Employee perceptions of autonomy may suffer from tracking policies that seek to monitor and perhaps control either the time employees spend on specific tasks or their physical locations. Tracking employees in these ways does little to encourage a sense among workers that they are autonomous beings that can make choices and are free from undue governance. Instead, it sends a message of tight control, almost akin to servitude. Myrna Arias, a woman who was fired for disabling an employer–

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street-banks-are-tracking-everything-employees-do/; Betsy Stark, *Companies Tracking Employees' Every Move*, ABC NEWS (Jan. 4, 2015), http://abcnews.go.com/WNT/story?id=131333&page=1; Andrea Peterson, *Some Companies Are Tracking Workers with Smartphone Apps. What Could Possibly Go Wrong?*, WASH. POST (May 14, 2015), https://www.washingtonpost.com/news/the-switch/wp/2015/05/14/some-companies-are-tracking-workers-with-smartphone-apps-what-could-possibly-go-wrong/.

142. Jimmy Rodela, *8 Compelling Reasons Why Businesses Should Track their Employees' Time*, BUSINESS2COMMUNITY.COM (June 26, 2015) http://www.business2community.com/human-resources/8-compelling-reasons-why-businesses-should-track-their-employees-time-01260595.

143. *Id.*

144. *Employee Tracker Solution Service*, SHARP TRACK PRIVATE LTD. www.indiamart.com/proddetail/employee-tracker-solution-service-16162390291.html (last visited Oct. 19, 2017).

mandated geographic tracking application from her phone, for instance, compared the software to a "prisoner's ankle bracelet."[145]

Monitoring policies also have the potential to erode employee feelings of competence. Employee tracking is a highly controlling move on the part of employers, and controlling environments are bad for perceived competence.[146] Tracking not only sends a strong message to employees about who is in charge, but also conveys a negative performance feedback signal. An employer's need to monitor an employee's every action suggests that the employer does not have much faith in the employee's ability to accomplish her duties independently. The implied performance message sent by tracking is clear: the boss believes an employee is not sufficiently competent or trustworthy to complete her duties without constant oversight.

b) Social Exchange

The chance for an employee to develop an innovation–promoting social exchange relationship with her employer is also affected by employee tracking. Tracking policies, through their real or implied exertion of control, may take away employees' voices. And because tracking policies imply that there is a single correct way to get work done, they fail to accommodate individual work styles.[147] For example, one employee may be most productive when working in short spurts, perhaps taking periodic breaks to read materials not directly related to her task list. If the employee is aware of tracking software that measures how long she is actively using word processing, analytic, or other task–related applications, she might artificially change her working style to satisfy the overt or implied expectations of her employers. Tracking policies likely also have a detrimental effect on employees' sense of respect and dignity as employees might rightly feel that they cannot be trusted to be productive and successfully accomplish their duties without monitoring.

c) Variety and Balance

Variety and balance are also prone to adverse effects from employee tracking policies. As described, one advantage of a remote work arrangement is the opportunity it gives employees to achieve balance in ways that work for them as individuals.[148] An employee with a young child,

145. Complaint for Damages, *supra* note 104, at 3.

146. Ryan & Deci, *supra* note 70, at 73–74.

147. *See supra* note 57 and accompanying text (explaining that accommodating individual employee needs and interests promotes social exchange).

148. *See supra* Section III.B.2.

for instance, might choose to do the bulk of his work in the early morning and late evening hours in order to achieve a satisfactory work–life balance. He may, at times, need to be away from his work station during typical work hours, for example, to pick his child up from daycare or take the child to a doctor's appointment. If an employer is tracking the employee's physical location during the day, however, the employee might feel uncomfortable being in non–work locations and may unnecessarily modify his otherwise productive behavior in ways detrimental to motivation and creativity.[149]

As also discussed in the context of remote work, workload variety and time spent on mindless tasks can be good for creativity.[150] Though self–regulation via the insertion of breaks, mindless tasks, and general reading is likely beneficial for creativity,[151] an employee whose every action is being tracked might feel uncomfortable engaging in these types of behaviors. The fact that she is being monitored might give her the impression (real or imagined) that her employer frowns on mindless or non–goal–directed activities.

C. CONCLUSION

Despite the weight of the research and attempts to disseminate these findings in popular and business journals, many creative companies still adopt, like Amazon, a socially costly "long hours" model; like Yahoo, a "no remote work" policy; or, like unnumbered unnamed companies, an employee monitoring policy. That these policies persist suggests that private ordering is failing to achieve its desired end of optimizing company–provided innovation incentives in many cases.

IV. A CRITICAL LOOK AT THE CONVENTIONAL WISDOM: EXPLANATIONS FOR MARKET FAILURE

As examined in detail in the previous Part, there are empirically–tested principles that promise to enhance creativity in the workplace. The fact that many companies do not adhere to these principles[152] suggests market failure when it comes to companies providing appropriate innovation incentives to their employees.

149. *See* Ong & Jeyaraj, *supra* note 136, at 1 (suggesting that lack of work–life balance affects job performance).

150. Elsbach & Hargadon, *supra* note 44, at 471–73, 76–77.

151. *See id.*

152. *See* Elsbach & Hargadon, *supra* note 44, at 470; *see also* Amabile, *supra* note 44, at 77–78.

This Part takes a closer look at why this failure might be occurring. Drawing from the law and economics literature, this Part identifies relevant circumstances where private ordering may not work as expected, and analyzes how these circumstances apply in the employee creativity context. In particular, a primary cause of private ordering failure is that parties (here, companies) do not always bear the costs of their actions. Bounded rationality, counterproductive social norms, and information asymmetries, when they exist, can also lead to undesirable results. Private ordering is similarly notoriously bad at addressing distributive concerns, which might also be harmful for innovation. Recognizing these failures should help policymakers craft an appropriate response, an issue this Part recognizes, and subsequent Parts tackle in more detail.

A. EXTERNALIZING CONSEQUENCES

According to Robert Thompson, "[p]rivate ordering is least likely to be effective when the private actors do not bear the costs of their own acts."[153] In these cases, legal intervention may be necessary to prevent companies from externalizing the costs of their behavior to society, since they have everything to gain and nothing to lose by doing so.[154] A classic example of cost externalization is the company that dumps its waste into an adjacent river.[155] Environmental law prevents this externalization by requiring the company to shoulder the costs of appropriate waste disposal.[156]

Cost externalization should not, at least in theory, be a concern when it comes to providing innovation incentives to employees. If a firm fails to provide these incentives, the company itself stands to suffer in a number of ways. Most obvious are the financial losses accruing from decreased performance and innovation within the firm.[157] Because the psychological factors that promote creativity are also closely tied to a range of health and well–being measures, the firm also stands to lose financially from issues such as increased sick leave, lowered retention, and absenteeism.[158] There may be additional, reputational costs if it becomes well–known that a firm's employees are dissatisfied, unmotivated, and uncreative.[159]

But because creativity and innovation are difficult to measure, and because many firms are unaware of—or simply may not believe—the

153. Thompson, *supra* note 21, at 99.
154. *Id.*
155. *See id.*
156. *Id.*
157. *See infra* Section V.A.
158. *Id.*
159. *See infra* Section V.C.

findings from the psychology literature discussed here, a firm might not know that it is incurring costs through its decision to provide suboptimal innovation incentives to its employees. This ignorance could help explain why many companies have not done better in this respect.

The persistence of companies in providing suboptimal innovation incentives does not necessarily mean that regulation is in order, however. The reason we normally impose regulation in these circumstances is because the company's and the public's interests are at odds, and we wish to prevent the company from foisting the costs of its selfish behavior on the larger society.[160] But in this case, the firm's and society's interests are aligned. Each stand to benefit if the company chooses to provide optimal innovation incentives to its employees: the firm through financial and reputational benefits, and society through the gains that accrue from increased innovation.[161] Rather than regulation, then, measures meant to overcome companies' biases and misconceptions should help companies take the actions that are in their own interests.[162] Part VI describes what these measures might look like.

B. BOUNDED RATIONALITY AND COUNTERPRODUCTIVE SOCIAL NORMS

1. Bounded Rationality

A second situation described by economic scholars that may justify legal intervention is one where bounded rationality[163] prevents parties from

160. Thompson, *supra* note 21, at 99.

161. *See e.g.*, Benjamin N. Roin, *The Case for Tailoring Patent Awards Based on Time-to-Market*, 61 UCLA L. REV. 672, 690 & n.73 (2014) (arguing that innovation enhances social welfare). Some have questioned the proposition that increased innovation is necessarily good for society. *See generally* Estelle Derclaye, *Eudemonic Intellectual Property: Patents and Related Rights as Engines of Happiness, Peace, and Sustainability*, 14 VAND. J. ENT. & TECH. L. 495 (2012); Ofer Tur-Sinai, *Technological Progress and Well–Being*, 48 LOY. U. CHI. L.J. 145 (2016).

162. *See* Gavin Clarkson, *Avoiding Suboptimal Behavior in Intellectual Asset Transactions: Economic and Organizational Perspectives on the Sale of Knowledge*, 14 HARV. J.L. & TECH. 711, 730 (2001) (arguing on the basis of organizational behavior theory that "[i]f the marketplace could be made aware of the information and given the metrics to utilize it, it is likely that [the behavior] would become more efficient"). As Clarkson argues—and as I describe in the next Section—informational measures alone might be insufficient to encourage this behavior because of bounded rationality. In Section VI.A.1, I explain how organizational metrics could help solve this problem.

163. For a general introduction to the concept of bounded rationality, see Owen D. Jones, *Time-Shifted Rationality and the Law of Law's Leverage: Behavioral Economics Meets Behavioral Biology*, 95 NW. U. L. REV. 1141, 1145–51 (2001).

making efficient choices in the absence of public ordering.[164] Bounded rationality conveys the idea that real people are limited in their cognitive abilities and these cognitive limitations can lead to suboptimal decision–making.[165]

Bounded rationality is in fact an issue for companies, and the ways in which it manifests itself in the organizational context have been well documented.[166] Some irrational organizational behaviors that may prevent firms from adopting innovation–enhancing policies include the status quo bias, which may lead organizations to prefer current circumstances and practices, and the conformity bias, which may lead organizations to prefer policies and views consistent with those of their reference group.[167] Organizations, like people, are also limited in the amount of information they can process, and tend to use heuristics, or shortcuts, to make decisions.[168]

The status quo and conformity biases help explain the widespread non–adoption of company behaviors and policies known to promote innovation. An irrational preference for the status quo may lead organizations to continue with the same policies they have always had, even if these policies and behaviors are counterproductive. This is particularly likely to happen, if—as is likely the case here—the costs of maintaining these policies are not readily apparent or are difficult to measure. And because many companies have not yet adopted innovation–friendly policies, the conformity bias may exacerbate this preference, as organizations balk at adopting an approach that is radically different from that of their peers.[169]

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164. Thompson, *supra* note 21, at 99–100.

165. *See*, *e.g.*, Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1477 (1998).

166. *See, e.g.*, Edward L. Rubin, *Images of Organizations and Consequences of Regulation*, 6 THEORETICAL INQUIRIES L. 347, 354–57 (2005); MAX BAZERMAN, JUDGMENT IN MANAGERIAL DECISION MAKING 11–77 (4th ed. 1998); H. Landis Gabel & Bernard Sinclair-Desgagne, *The Firm, Its Routines and the Environment*, *in* THE EARTHSCAN READER IN BUSINESS AND SUSTAINABLE DEVELOPMENT 96–99 (Richard Starkey & Richard Welford eds., 2001); Chip Heath et al., *Cognitive Repairs: How Organizational Practices Can Compensate for Individual Shortcomings*, 20 RES. ORG. BEHAV. 1, 6–22; Donald C. Langevoort, *Organized Illusions: A Behavioral Theory of Why Corporations Mislead Stock Market Investors (And Cause Other Social Harms)*, 146 U. PA. L. REV. 101, 130–56 (1997).

167. Sharon Hannes, *Images of Organizations and Interfirm Externalities: A Comment on Prof. Rubin*, 6 THEORETICAL INQUIRIES L. 391, 399 (2005).

168. *See* Clarkson, *supra* note 162, at 728.

169. *See id.*

Even if an organization wishes to adopt policies and encourage behaviors that are more conducive to the creativity of its employees, information–processing limitations may keep it from doing so. As discussed, there is an abundance of psychology and organizational behavior literature studying the types of environments and policies that contribute to, or detract from, employee creativity. But this very abundance might prove overwhelming and make it difficult for an organization, with limited information–processing skills, to draw meaningful conclusions and make decisions about what changes to make.[170]

2. *Counterproductive Social Norms*

Counterproductive social norms may exacerbate the problems arising from bounded rationality. Private ordering depends largely on social norms that encourage actors to engage in desired behaviors for its success. But what if social norms are such that they do not encourage, or even discourage, the behaviors we hope to promote?

This is not just a hypothetical concern for organizational creativity. As explained in the previous Part, many companies, due to bounded rationality, incorrect information, or simple ignorance, behave in ways that are counterproductive to the creativity of their employees. And because many firms act in these ways, social norms may work to the detriment, rather than the benefit, of innovation.

The practice of group brainstorming offers a simple illustration of how misguided information may entrench counterproductive social norms. The concept of brainstorming is attributed to Alex Faickney Osborn, who claimed in 1953 that the practice could lead to more idea generation and creativity.[171] Since that time, brainstorming has become widespread in organizations as a means of creative problem solving.[172]

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170. *See id* at 730; Reza Dibadj, *Reconceiving the Firm*, 26 CARDOZO L. REV. 1459, 1506 (2005).

171. ALEX F. OSBORN, APPLIED IMAGINATION 229 (1953).

172. Fred C. Lunenburg, *Decision Making in Organizations*, 15 INT'L J. MGMT. BUS. & ADMIN. 1, 3 (2011); *see also* SCOTT G. ISAKSEN, CREATIVE PROBLEM SOLVING GRP., A REVIEW OF BRAINSTORMING RESEARCH: SIX CRITICAL ISSUES FOR INQUIRY (1998), www.cpsb.com/resources/downloads/public/302-Brainstorm.pdf (discussing brainstorming's popularity and characterizing it as "one of the most well-known tools of creative problem solving").

But empirical research questioning the effectiveness of brainstorming has been in circulation for over two decades.[173] Today, many organizational behaviorists have concluded that group brainstorming is generally ineffective as a means of boosting creativity within firms.[174] Yet because of social norms that have firmly entrenched brainstorming as a legitimate creative problem–solving tool, working in tandem with simple ignorance about the value of the practice and other issues of bounded rationality (the status quo and conformity biases, for instance), the practice persists.

3. *Addressing Bounded Rationality and Counterproductive Social Norms*

Because bounded rationality and counterproductive social norms are concerns for organizations that negatively affect their ability to adopt innovation–promoting policies, it might appear—consistent with the reasoning of law and economics scholars—that regulation is justified. But when we consider the specific biases at work here, it becomes apparent that ongoing regulation is not needed. In fact, if companies can somehow be persuaded to make positive changes, these biases may actually reinforce progressive behavior.

Consider the status quo bias. For organizations that have not yet adopted innovation–enhancing policies, the bias works against change. Yet once changes are made, the status quo bias will help entrench these advances. And if a sufficient number of companies adopt similar policies, the conformity bias may help encourage laggards to follow suit.

The question, then, is how to persuade firms to make positive changes in the first place. This might be a particularly challenging task given companies' information–processing limitations.

A potential answer lies in metrics. Just as individuals use heuristics, or decision–making shortcuts, to overcome information–processing limitations in daily life, metrics provide a simple way for companies to digest the findings from the organizational behavioral literature and

173. *See e.g.*, Michael Diehl & Wolfgang Stroebe, *Productivity Loss in Brainstorming Groups: Toward the Solution of a Riddle,* 53 J. PERSONALITY & SOC. PSYCHOL. 497, 497 (1987) (reviewing twenty–two empirical brainstorming studies and finding overall that group brainstorming is correlated with the generation of fewer ideas than individuals working alone).

174. *See, e.g.*, Elsbach & Hargadon, *supra* note 44, at 473; *see also* Brian Mullen, Craig Johnson & Eduardo Salas, *Productivity Loss in Brainstorming Groups: A Meta-Analytic Integration*, 12 BASIC & APPLIED SOC. PSYCHOL. 3, 18 (1991).

measure their progress in achieving creativity-facilitating environments.[175] Publicly available and standardized metrics also allow outsiders—including potential employees and investors—to judge how an organization is doing in this respect. This latter characteristic of metrics may help provide any additional pressure a firm might need to overcome status quo and conformity biases and implement changes that will benefit both itself and society. Part VI considers this proposal in more detail.

C. INFORMATION ASYMMETRIES

According to economic theories, private ordering schemes are most successful when all interested parties have access to full information.[176] When information asymmetries exist, markets tend to be less efficient.[177] This is the classic "market for lemons" problem, dubbed for its application to the used car market. Sellers are aware when the used car they are selling is a "lemon," but buyers are not. Due to the possibility that a prospective purchase might be a lemon, buyers are willing to pay less for any given used car than they would if they knew the car was good. But at this discounted price, sellers are unwilling to sell the cars they know are good and will offer only lemons. This practice increases the probability that a buyer will encounter a lemon, and leads to further discounting and an eventual collapse of the market.[178]

Similarly, in the firm context, information asymmetries between employers and employees may prevent firms from adopting optimal innovation incentives for their workers. As this Article later explains, employees report greater satisfaction and well–being when they work for

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175. *See* Clarkson, *supra* note 162, at 731 (discussing how metrics can overcome information-processing limitations in organizations in the context of intellectual asset transactions); Dibadj, *supra* note 170, at 1533–34 (describing how norms can help organizations digest and implement complex information).

176. *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960); Ian Ayres & Jack M. Balkin, *Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond*, 106 YALE L.J. 703, 706 (1996) ("Coase argued that regardless of the initial allocation of entitlements, efficient deals would be struck under ideal bargaining conditions, which include full information.").

177. *See, e.g.*, Bernard S. Black, *Information Asymmetry, The Internet, and Securities Offerings*, 2 J. SMALL & EMERGING BUS. L. 91 (1998) (arguing that information asymmetries harm the efficiency of securities markets).

178. *See* HAL R. VARIAN, MICROECONOMIC ANALYSIS 468–70 (3d ed. 1992); Catherine L. Fisk, *Credit Where It's Due: The Law and Norms of Attribution*, 95 GEO. L.J. 49, 106–08 (2006) (discussing the market for lemons in the context of professional attribution).

firms that adopt innovation–promoting policies.[179] If information were perfect in this space, we would expect employee preferences to push firms toward these types of policies. All other things (like financial compensation) being equal, workers would likely prefer to work for firms that provide greater satisfaction and well–being.[180] They would vote with their feet,[181] making it difficult for firms that do not provide for these needs to attract and retain top talent.[182]

But just as it is very difficult, before you purchase a used car, to discern whether it is a lemon, so too is it difficult to know, before you accept a job and invest significant time with a company, whether it provides a culture conducive to well–being and innovation. Employees may thus choose to work for companies they would not choose to work for had they had full information. As a result, employee preferences are not conveyed to employers, who are not given appropriate incentives to overcome the bounded rationality problems that may be keeping them from adopting innovation-promoting policies in the first place.

The market for lemons problem can be ameliorated by measures that address the underlying information asymmetries. In the context of used cars, the problem is solved with a signal that honestly communicates the quality of the car, such as an enforceable warranty[183] or "certified pre–owned" status.

One can think of signals that could do analogous work in the employer-employee context. Just as certified pre–owned status conveys a signal that a used car meets certain pre-defined standards, a certification program for companies conveys to potential employees that an organization has undertaken specific measures to enhance employee well–being and satisfaction. For purposes of this Article, these happen to be the very

179. *See infra* Section V.B.

180. *Id*. There is even evidence that employees are willing to forego compensation in order to work in environments that satisfy their psychological needs in ways that are innovation promoting. In one study, researchers found that employees with a Ph.D. in biology were willing to accept a twenty–five percent decrease in pay from industry employers who supported their autonomy by allowing them to engage in independent research and publishing. Scott Stern, *Do Scientists Pay to Be Scientists?* 50 MGMT. SCI. 835 (2004); *see also* Bair, *supra* note 13, at 330 (discussing this finding).

181. *See* Tiebout, *supra* note 39, at 418.

182. *See id*. (discussing how the "consumer-voter" will choose to move to the community that "best satisfies his preference pattern for public goods").

183. Fisk, *supra* note 178, at 107.

measures that stand to promote innovative behaviors. Part VI describes in more detail how such signaling mechanisms can be implemented.

D. DISTRIBUTIVE CONCERNS

A final, common criticism of private ordering schemes is that they do not sufficiently account for distributive concerns.[184] When initial allocations of wealth or power among actors are unjust, it is unlikely that private ordering will correct them.[185]

In the organizational context, the power disparities that exist between employer and employee have been well studied.[186] This power dynamic, generally understood to favor employers, may result in employers providing suboptimal work environments to their employees.

To see why, consider the employee who is dissatisfied with her work environment. In the ideal private ordering situation, where Tiebout sorting is in effect, this employee would simply leave and go work for a firm that better meets her needs. In the aggregate, the movement of dissatisfied employees to organizations that better provide for employee needs would push all firms that cared about recruitment and retention to do better in this respect.

Moving from the ideal to the real, however, there are many reasons why this scenario might not play out as anticipated. Even if the employee had perfect information about other firms so that she knew for certain her new job would provide a more satisfying work environment, power dynamics in

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184. Macey, *supra* note 20, at 1141; *see also* ROBERT C. ELICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 283–84 (1991) ("[T]he hypothesis of welfare-maximizing norms provides no basis for expecting that norms will serve certain ends, such as corrective or distributive justice . . . .").

185. Macey, *supra* note 20, at 1141.

186. *See, e.g.*, Aditi Bagchi, *The Myth of Equality in the Employment Relation*, 2009 MICH. ST. L. REV. 579, 580 (2009); Samuel R. Bagenstos, *Employment Law and Social Equality*, 112 MICH. L. REV. 225, 227 (2013); Martin H. Malin, *The Distributive and Corrective Justice Concerns in the Debate Over Employment At-Will: Some Preliminary Thoughts*, 68 CHI.-KENT L. REV. 117, 145–46 (1992); Guy Davidov, *The Principle of Proportionality in Labor Law and Its Impact on Precarious Workers*, 34 COMP. LAB. L. & POL'Y J. 63, 67 (2012); Bert-Jaap Koops, *Law, Technology, and Shifting Power Relations*, 25 BERKELEY TECH. L.J. 973, 996–1006 (2010) (discussing how technological advancements affect the power relations between employers and employees); James M. Duncan, Comment, *Agreements Not To Compete*, 33 LA. L. REV. 94, 95–6 (1972) (discussing the power disparities among employers and employees in the context of non–compete agreements). *But see* Richard A. Epstein, *In Defense of the Contract At Will*, 51 U. CHI. L. REV. 947, 974–77 (1984) (arguing that the balance of power between employees and employers may be more evenly divided than commonly believed).

her firm might still prevent her from making the move. For example, the employee might be dependent on a favorable reference from her current employer to procure a new job, something that the employer could withhold for any reason, or no reason at all.[187] Because most employment contracts are at–will, a search for a new job, if discovered, might put the employee's current job at risk. And strict non–compete agreements, entered into under conditions of unequal bargaining power, might prevent her from finding a job in the same field.[188]

In many cases, including here, the distributive concerns implicated by private ordering are deontological—in this case, private ordering's failure to address the power disparities between employers and employees, which contributes to the unjust result of employees being stuck in jobs detrimental to their happiness and well–being. But because the values that contribute to employee well–being also contribute to creativity and innovation,[189] the concern is also one of efficiency. Unequal power distributions, for the reasons described above, might result in employees staying in jobs in which they are less creative. And if employees do not leave when creativity suffers, firms are not given appropriate incentives to adopt more innovation–friendly and efficiency–promoting policies.[190]

One potential way to counter this problem is through laws that make it more difficult for firms to procure strict non–compete agreements from their employees. To the extent that we can limit this barrier to employee mobility, employee preferences for innovation–promoting firms can be more freely revealed, which will lead, in turn, to wider organizational adoption of innovation–enhancing policies. Part VI discusses this potential solution in more detail.

V. PRIVATE ORDERING REVISITED: ADVANTAGES OF PRIVATE ORDERING

Previous Parts argued that private ordering might not be working as expected in the employee innovation context and identified potential reasons for the failure. The obvious next question is what we should do about it. Should we abandon private ordering and take a different approach, or are there good reasons why we should maintain a basically private regime?

187. *See* Fisk, *supra* note 178, at 71 & n.75.
188. *See* Lobel, *supra* note 34, at 791.
189. *See infra* Section V.A.
190. *Id.*

This Part revisits the case for private ordering in light of the analysis in the previous Parts. It argues that despite the apparent market failure, private ordering still maintains significant advantages over regulation. In particular, this Part introduces novel insights from the psychology literature indicating that the financial gains to be had from offering these incentives are greater than previously expected. The empirical literature also suggests that employees who are more creative are also happier at work, and should therefore prefer to work for companies that offer these incentives. Finally, the types of incentives Part III identified should lead to strong reputational gains for companies that adopt them. These previously unrecognized benefits provide a compelling reason for companies to invest in innovation incentives without government intervention. The next Part suggests that rather than strong regulatory action, we can implement policies that debias company decision–makers and encourage desirable behaviors. Once implemented, the companies should recognize the benefits that flow from these behaviors and continue them of their own accord.

A. INNOVATION INCENTIVES ARE (STILL) GOOD FOR BUSINESS

Though this Article has pointed out that there are business models and practices that do not depend on innovation for financial success,[191] the fact still remains that innovative companies will tend to benefit economically, in the long term, from innovation.[192] Apart from the obvious potential profits from innovative new products, insights from psychology suggest that employees who receive effective innovation incentives, in addition to being more creative, are also more loyal (which reduces expensive turnover),[193] more productive,[194] show reduced absenteeism,[195] and take fewer sick days.[196] All of these behaviors translate into financial gains for their employers.

These pecuniary benefits are made even more attractive by the fact that the costs of providing these incentives can be relatively low. Creating a culture of respect and dignity, for instance, may require an initial outlay to

191. *See supra* Part III.
192. *See, e.g.*, Tracy, *supra* note 25, at 94–95.
193. *See, e.g.*, Yasbek, *supra* note 92, at 6.
194. *See, e.g.*, Bloom et al., *supra* note 127, at 170 (finding in one case study that allowing employees the option to work from home improved productivity by twenty to thirty percent).
195. *See, e.g.*, Yasbek, *supra* note 92, at 18.
196. *Id.* at 17.

train managers or to correct a toxic environment,[197] but once achieved should require very little financial investment to maintain.[198] Policies that promote balance—like allowing for remote work—can also be implemented at low cost, and in fact might save companies additional money by lowering overhead and facility spending.[199] Although not every conceivable innovation–promotion policy is costless or low–cost, many companies still have room to make major improvements in these areas without necessarily spending a lot of money. One team at the biotech firm Genentech, for example, realized great gains in creativity by adopting a number of relatively low–cost tactics, including setting team goals, instituting a non–financial rewards and recognition program, and encouraging managers to incorporate innovating–promoting concepts into their management styles.[200]

B. INNOVATION INCENTIVES ENHANCE EMPLOYEE SATISFACTION

Relatedly, insights from psychology indicate that employees whose employers offer effective innovation incentives are not only more creative, but are also more satisfied and happier both inside and outside the workplace.[201] All else (like salary) being equal, and correcting for information asymmetries and power disparities that might affect employee

197. *See* Jennifer Chatman, *Culture Change at Genentech: Accelerating Strategic and Financial Accomplishments*, 56 CAL. MGMT. REV. 113, 114 (2014) (describing in detail how such a culture change was achieved at biotechnology company Genentech Berkeley).

198. *See id.* (describing various low–cost cultural initiatives, including informing new hires through printed materials of the cultural expectations, and providing employees with noneconomic rewards and recognition).

199. Mark Feldman, *Why Remote Work is Booming*, TECH.CO (Aug. 9, 2014, 2:00 PM), http://tech.co/remote-work-trend-booming-2014-08.

200. *See* Chatman, *supra* note 197, at 114–28.

201. *See, e.g.*, Yasbek, *supra* note 92, at 6, 7, 17 (finding that work–life balance policies are associated with greater employee satisfaction); Kasser & Sheldon, *supra* note 90, at 244, 245 (finding that employees with lower work–life balance exhibit lower life satisfaction and those with higher work–life balance show higher job and family satisfaction); Kasser & Brown, *supra* note 90 (same); Lee & Brand, *supra* note 139, at 330 (finding that employees with greater control over their physical work environments report greater job satisfaction); Elsbach & Pratt, *supra* note 139, at 195–96 (same); Berscheid & Reis, *supra* note 75 (finding that people who experience greater relatedness are also happier); Sheldon, Cummins & Kamble, *supra* note 88, at 1104 (finding that employees with greater work–life balance also reported greater subjective well–being); Reis et al., *supra* note 67, at 420 (finding that people who have greater opportunities for autonomous thought and action are also happier); Sheldon, Boehm & Lyubomirsky, *supra* note 98, at 910 (finding that people who engage in a greater variety of positive activities report greater well–being).

mobility,[202] employees should prefer to work for companies that offer these incentives, not just because they expect to be more creative, but, more powerfully, because they expect to be happier. Though some companies may be impervious to employee turnover,[203] many companies do need to retain talent in order to achieve financial success. The need to recruit and retain the best employees provides companies with a good reason to offer innovation incentives consistent with the principles discussed here.

C. INNOVATION INCENTIVES ARE GOOD PRESS

There is an additional reason why companies should, after correcting for market failures, want to optimize innovation incentives without outside intervention. This reason becomes clear when we look at the types of principles and policies that promote innovation: principles like supporting worker autonomy and competence,[204] treating employees with respect,[205] and giving employees the opportunity to enjoy full and meaningful lives within and outside of work.[206] Quite simply, these strategies make for good press.

Take for example Google, a company that has adopted many policies that, under the analysis presented here, should be good for innovation.[207]

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202. *See supra* Section IV.C; *supra* Section IV.D. One important issue beyond the scope of this Article is how to provide well–being–enhancing work conditions for non–creative employees. The suggestions proposed here will probably not be effective in these cases, since they rely on the promise of economic benefits (mediated by increased innovation) to nudge companies to adopt these incentives. Since the same financial benefits do not follow for non–creative personnel, companies may not have any incentives to provide favorable working conditions for these people. Yet, there are moral reasons why we might want companies to provide them. Though I do not propose to address this problem here, I do want to acknowledge that most innovative products depend on contributions from countless non–creative (and perhaps poorly–treated) personnel. Too often these employees are drawn from vulnerable populations. *See, e.g.*, Kenneth Goldsmith, *The Artful Accidents of Google Books*, NEW YORKER (Dec. 4, 2013), https://www.newyorker.com/books/page-turner/the-artful-accidents-of-google-books (discussing the "army of invisible laborers" who scan books for the Google book project and noting the "sharp divisions" between these personnel and professional employees on Google's campus).

203. *See supra* Part III.

204. *See supra* Section III.A.2.

205. *See supra* note 60 and accompanying text.

206. *See supra* Section III.A.3

207. For example, Google emphasizes work–life balance for its employees. *See* Stewart, *supra* note 9. It also promotes variety of experience and autonomy by allowing employees to take extended time off to pursue personal, community–based projects. *See supra* note 8 and accompanying text.

The press loves to report on these incentives, and the tone of the reports is almost uniformly positive.[208] In contrast, Amazon recently learned the hard way[209] that policies that likely do little to promote innovation—including policies that deemphasize work–life balance[210] and employee autonomy[211]—do not play well in the popular media.[212]

Because companies can expect to gain positive reputational benefits[213] by providing innovation–enhancing incentives (and, conversely, may be harmed reputationally by failing to provide these incentives) they have a rational reason to offer these incentives without government or legal intervention.

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208. *See, e.g.*, D'Onfro & Smith, *supra* note 8; Stewart, *supra* note 9; Luke Stangel, *Google's 10 Best Perks: Cars, Sleep Pods – You Name It*, SILICON VALLEY BUS. J. (Apr. 15, 2013, 5:16 PM), http://www.bizjournals.com/sanjose/news/2013/04/12/googles-10-best-employee-perks.html; Ramona Emerson, *Google's Best Benefits: The Top 7 Perks Google Offers Employees*, HUFFINGTON POST (Jan. 31, 2012), www.huffingtonpost.com/2012/01/30/google-benefits-employee-perks_n_1242707.html; *Inside Google Workplaces, From Perks to Nap Pods*, CBS NEWS (Jan. 22, 2013, 10:53 AM), http://www.cbsnews.com/news/inside-google-workplaces-from-perks-to-nap-pods/. *But see* Josh Kovensky, *Chief Happiness Officer Is the Latest, Creepiest Job in Corporate America,* NEW REPUBLIC (July 22, 2014), https://newrepublic.com/article/118804/happiness-officers-are-spreading-across-america-why-its-bad (arguing that Google's preoccupation with employee happiness represents an unwarranted "intrusion into [employees'] emotional lives").

209. Kantor & Streitfeld, *supra* note 3 (presenting a highly critical view of Amazon's policies). According to Amazon, the company cooperated with the Times in part because Kantor assured their vice president of public relations that the piece would be positive. Jay Carney, *What the New York Times Didn't Tell You*, MEDIUM (Oct. 19, 2015), https://medium.com/@jaycarney/what-the-new-york-times-didn-t-tell-you-a1128aa78931.

210. *See supra* note 105.

211. *See* Kantor & Streitfeld, *supra* note 3 ("'If you're a good Amazonian, you become an Amabot,' said one employee, using a term that means you have become at one with the system.").

212. I do not mean to suggest that every Amazon policy is anathema to innovation. Amazon seems to be very good at stimulating relatedness in particular among its employees, a value that can be promoted by emphasizing the shared goals of employees. *See* Kantor & Streitfeld, *supra* note 3 (describing how the company uses the word "mission" to describe its goal of providing "lightning-quick" delivery of consumer products).

213. *See*, *e.g.*, Scott Malone, *Google Has Best Reputation in U.S., Airlines Fall: Survey*, REUTERS (June 23, 2008, 9:28 PM) (reporting the results of a survey finding that Google had the best corporate reputation in America, and attributing these results to Google's employee perks).

D. FLEXIBILITY IS (STILL) IMPORTANT

Part II discusses flexibility as a traditionally–cited advantage of private ordering regimes.[214] Though Part III identifies several general creativity–enhancing principles and gives some specific examples of policies that might be at odds with these principles, in practice, there are myriad ways to provide incentives consistent with these principles. Indeed, the opportunities are limited only by the innovative spirit of the organizations implementing them. And this is a good thing. The market failure this Article identifies arises not from the fact that companies are adopting approaches that differ from each other, according to their needs and the needs of their employees. This, in fact, remains one of the primary advantages of private ordering. Instead, it's that many companies are taking approaches that are completely inconsistent with the principles discussed here, to the detriment of innovation, and ultimately, society. The task, then, is not to make every company identical to every other company, as might happen with strong government intervention, but to nudge companies in innovation–promoting directions—directions that ultimately might vary quite widely from company to company.

VI. DEBIASING COMPANY DECISION–MAKING TO PROMOTE INNOVATION

Despite the apparent flaws of a private ordering scheme in providing employees with optimal innovation incentives, it remains fundamentally viable as the best way to accomplish this goal. If we are to rely on private ordering, however, it is imperative that we correct the market failures that are keeping it from working as intended.

This Part examines various ways in which regulation and other initiatives could supplement the basic private ordering scheme to combat these flaws. Some of these solutions draw from the tradition of behavioral law and economics. Scholars from this discipline seek to promote socially beneficial behaviors by correcting for cognitive biases and other bounded rationality problems. In the language of behavioral law and economics, the goal is to 'debias' decision–makers and 'nudge' them in welfare–enhancing directions by changing incentives in ways that take advantage of behavioral insights.[215] This approach maintains the significant advantages of private

214. *See supra* Section II.C.

215. *See, e.g.*, Christine Jolls & Cass R. Sunstein, *Debiasing Through Law*, 35 J. LEGAL STUD. 199, 199–203 (2006) ("[L]egal policy may respond best to problems of

ordering because it is designed to help companies make welfare–enhancing choices of their own volition rather than mandating specific choices.[216] This Part proposes several policy interventions, meant not to replace private ordering, but instead to nudge companies to act in innovation–promoting ways. The list is not meant to be exhaustive. Instead, it is a starting point, designed to begin a conversation about the types of initiatives that could encourage more companies to adopt innovation-promoting policies. I propose possible roles for metrics and certification initiatives, intellectual property law, and employment law, particularly as it bears on employee mobility.

A. THE ROLE OF METRICS AND CERTIFICATION

One major challenge to private ordering manifests itself when private actors—here, companies—have access to the information they need to act in efficient ways, but bounded rationality causes them to behave inefficiently.[217] Information asymmetries and distributive concerns may exacerbate these tendencies because employees, who have less information and bargaining power than firms, are unable to reveal their preferences in ways that will push firms towards efficient behaviors.[218] Formalized metrics and certification programs can help overcome these bounded rationality problems.

1. Metrics

Before a company can be expected to implement innovation–promoting policies, it needs to know what works. Fortunately, this information is accessible to those who have a desire to find it. The primary research synthesized in this Article has been reported in scientific and other academic journals. Other scholars have written books, blog posts, and popular press articles for a corporate audience in an attempt to educate company decision–makers about these principles.

But, as the reality of common company practices demonstrates, simply having the information out there is often not enough. Content with the status

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bounded rationality . . . by operating directly on the boundedly rational behavior and attempting to limit it."); Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is Not an Oxymoron*, 70 U. CHI. L. REV. 1159, 1163–67 (2003) ("So long as people are not choosing perfectly, it is at least possible that some policy could make them better off by improving their decisions.").

216. *See* Sunstein & Thaler, *supra* note 215, at 1163–67.

217. *See supra* Section IV.B.

218. *See supra* Section IV.C; *supra Section* IV.D.

quo or the fact that they are doing what other similarly situated companies are doing, companies might not be compelled of their own accord to seek out the information. If they do, they might not have the skills to correctly interpret the information, finding the incremental and sometimes conflicting nature of academic research to be confusing and unhelpful. Due to information–processing limitations, they might not be able to translate the information into beneficial action. [219] And due to faulty intuitions about hard work and shirking, they might simply fail to believe some of the principles. The fact that giving employees more freedom and personal time will actually result in more creativity and productivity, for instance, might seem implausible to a manager steeped in very different views about productivity.

This is where performance metrics can help. A metric is a quantifiable indicator of company performance; in this case, the metrics would be designed to measure how well companies are adhering to the principles of employee creativity discussed in this Article. Metrics help overcome information–processing limitations because they provide easily understandable guideposts, letting companies know how they are doing and what they can do better to promote innovation.[220] If the metrics are publicly available, they also allow outsiders, including other firms, investors, and potential employees, to make these same judgments.

The public availability feature of metrics may be particularly useful in helping firms overcome status quo and conformity biases. If a company knows that it will be judged in ways that have an easily–identifiable effect on its bottom line,[221] this understanding may provide the impetus it needs to overcome any inertial preference for the status quo. And as more companies adopt policies that conform to these metrics, the conformity bias may act to persuade other firms, which have access to these metrics (just as they know that other companies have access to theirs), to overcome their own status quo biases.

Amazon's case presents an anecdotal example of how publicizing company practices and policies can push companies in the direction of innovation–promotion. A few months after the critical New York Times

219. *See supra* Section IV.B.

220. *See* Clarkson, *supra* note 162, at 731 (discussing how metrics can overcome information–processing limitations in organizations in the context of intellectual asset transactions); Dibadj, *supra* note 170, at 1534 (describing how standardized rules can help organizations digest and implement complex information).

221. *See supra* Part VI.A.

piece was published, Amazon announced several changes to its employee policies, including new extended family leave and flexible work policies.[222] Consistent with the principles discussed in Part III, these new policies should promote innovation. Of course, we cannot expect the New York Times to publish a high–profile piece documenting the practices of every company in the United States. Metrics offer a more systematic and far–reaching way to achieve a similar result.[223]

What might innovation–focused performance metrics look like? Although a comprehensive proposal is beyond the scope of this Article, ideally, these metrics would focus on concrete and measurable steps companies can take to promote the values described earlier: social exchange, autonomy, relatedness, competence, and variety and balance. A degree of standardization would be key to successful performance metrics, so that outside observers could have some confidence in what the metrics communicate. At the same time, however, to preserve the benefits of flexibility and familiarity with a company's unique situation that private ordering provides, the metrics should be sensitive to the fact that there are a variety of ways to promote innovation–enhancing values.

To illustrate, consider a performance metric that measures whether a company offers a standardized training program aimed at teaching managers how to create social exchange relationships with their employees. This metric provides a concrete step that firms can take to enhance innovation (offering a training program) and does so in a standardized way (the training is the same for all firms). Yet it still allows for flexibility because individual managers within firms will implement their training in ways that make sense for their particular industries and employees. A publicly– or privately–administered metrics system could dictate the details of the training and keep published records of firms that require their managers to take the training.

222. David Streitfeld, *Amazon Adds New Perks for Workers and Opens a Bookstore*, N.Y. TIMES (Nov. 2, 2015), https://www.nytimes.com/2015/11/03/technology/amazon-adds-new-perks-for-workers-and-opens-a-bookstore.html.

223. Existing online company–evaluation platforms like GlassDoor may also be helpful in this regard. But because they rely on volunteered information from employees they suffer from the flaws of inconsistent standards and inconsistent availability of information. Metrics offer a more reliable and systematic way to provide relevant information to the public.

2. *Certification*

A natural outgrowth of a metrics system is a certification program. Certification provides a simple way for firms to communicate to investors, potential employees, and other firms that they have met certain minimum metrics–based standards.

The signaling work done by certification helps combat the efficiency issues raised by information asymmetries in the workplace.[224] In the used car market, a "certified pre–owned" car solves the market for lemons problem because it communicates to the buyer that the car meets certain quality standards.[225] Similarly, a certification program for firms indicates to interested parties that the company has taken specific steps to create an innovation–conducive environment. This helps solve the information asymmetry problem between employers and employees, and helps potential employees choose workplaces that are both satisfaction– and innovation–enhancing.[226] Because, all else being equal, employees will presumably prefer these workplaces, it also provides appropriate market incentives to companies to achieve certification.

Metrics and certification could be either privately or publically administered, with concomitant advantages and disadvantages to each. A public system, similar to the bar or other professional certification programs (but targeted towards companies rather than individuals) would be costlier to administer, but would likely achieve more buy–in, even if voluntary. Conversely, a privately initiated and administered program might be less costly and more responsive to changing information, but would require support and participation from well–respected industry players to ensure widespread acceptance. Whether publically or privately administered, distinct programs for broad categories of industries—technology, pharmaceuticals, and the like—would likely be beneficial. In addition to helping garner acceptance, having distinct programs for different fields would improve the programs' ability to reflect industry–specific concerns.

One disadvantage of metrics and certification programs is the potential for a "race to the bottom," as is sometimes seen in regulatory regimes.[227] Companies might treat certification as a "ceiling," performing the minimum

224. *See supra* Section IV.C.
225. *Id.*
226. *See id.*; *supra* Section VI.A.
227. *See, e.g.*, Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210, 1213–16 (1992).

necessary to achieve certification and its concomitant reputational and financial benefits, but no more.[228] Further, while metrics are meant to provide useful heuristic shortcuts to help companies gauge how they are doing in providing innovation–enhancing environments, there is a danger that they will treat the metrics as ends in themselves and miss opportunities for more meaningful reform.[229]

Despite these challenges, however, the potential benefits of metrics and certification programs are still substantial. If these programs can encourage companies that would otherwise do nothing to undertake innovation–promoting reform, they have performed their function. And hopefully the educational experience a metrics and certification program ideally provides will convince companies that it is in their financial interest to do all they can to promote innovation within their organizations.

B. THE ROLE OF EMPLOYMENT LAW

An additional major drawback of private ordering schemes is that they do not account for distributive concerns.[230] Within organizations, unequal power distributions between employers and employees might prevent employees who are dissatisfied from seeking employment elsewhere.[231] This dynamic, in turn, may fail to provide firms with appropriate incentives to adopt innovation–friendly policies.[232]

A solution to this challenge lies in employment law. Specifically, in laws and policies that address these power disparities and make it easier for employees to leave firms that do not promote creativity and employee well–being. When employee preferences for innovation–promoting firms are more easily acted upon, we can expect broader company adoption of innovation–enhancing policies.[233]

Need for action in this area may be particularly urgent, since it appears that current laws and policies are making it harder for employees to find and accept new jobs.[234] Orly Lobel has comprehensively documented this trend,

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228. *See, e.g.*, Inara Scott, *Antitrust and Socially Responsible Collaboration: A Chilling Combination?*, 53 AM BUS. L.J. 97, 107 (2016) (describing this and other criticisms of certification programs).

229. *See* Clarkson, *supra* note 162, at 17–19 (discussing the potential dangers of metrics in the intellectual asset transaction context).

230. Macey, *supra* note 20, at 1141.

231. *See supra* Section IV.D.

232. *Id.*

233. *See supra* Part V.B.

234. *See* Lobel, *supra* note 34, at 824–30.

which includes the rise of restrictive contractual non–compete agreements;[235] the widespread adoption of post–employment restrictions in employment agreements, including non–solicitation, non–poaching and non–dealing clauses;[236] and the emergence of so–called "cognitive cartels," or agreements among firms to not solicit or hire other firms' employees.[237]

One approach to this challenge is simply to prohibit the enforcement of non–compete agreements, as California does.[238] It is often argued that California's approach has led to enhanced innovation within the state.[239] An even stronger step states could take is a broader ban prohibiting enforcement of all post–employment restriction clauses—clauses that prevent employees from soliciting or dealing with former clients or recruiting former employees, and that have similar detrimental effects on employee mobility as traditional non-compete agreements.[240] Additionally, aggressive antitrust prosecution could help thwart informal non–poaching agreements among firms.[241]

Of course, non–compete contracts, post–employment restrictions, and non–poaching arrangements are not the only power–disparity–related reasons for which employees may remain in a suboptimal creative environment.[242] But efforts to remove these significant barriers to employee mobility are at least a step in the right direction, and may prod companies toward adopting policies that are better for both employees and innovation.

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235. *Id.* at 824–27.

236. *Id.* at 827–30.

237. *Id.* at 830–33.

238. *See id.* at 827.

239. *See, e.g.*, Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete*, 74 N.Y.U. L. REV. 575, 608-09 (1999); Matt Marx, Deborah Strumsky & Lee Fleming, *Mobility, Skills, and the Michigan Non-Compete Experiment*, 55 MGMT. SCI. 875, 887 (2009); Bruce Fallick, Charles A. Fleischman & James B. Rebitzer, *Job Hopping in Silicon Valley: Some Evidence Concerning the Micro-Foundations of a High Technology Cluster*, 88 REV. ECON. & STAT. 472 (2006).

240. *See* Lobel, *supra* note 34, at 828–29.

241. *See id.* at 830–31; *see also generally* ORLY LOBEL, TALENT WANTS TO BE FREE: WHY WE SHOULD LEARN TO LOVE LEAKS, RAIDS, AND FREE-RIDING (2013) (arguing that employee mobility is good for innovation).

242. For example, as discussed earlier, an employer might arbitrarily withhold a crucial favorable reference, or an employee might be limited in her ability to search for a new job without risking her current source of income.

C. THE ROLE OF INTELLECTUAL PROPERTY

The collection of statutory, administrative, and judicially–created rules known as intellectual property law is the primary vehicle for promoting innovation in the United States.[243] Is there, then, a role for intellectual property law in promoting innovation among organizational employees? Here, the Article argues that intellectual property law has the potential—not yet realized—to play an ongoing role in providing creativity incentives to employees. Namely, intellectual property can help establish a social norm of providing attribution to creators, whether their innovative behavior occurs in or out of the firm.[244]

In general, legal rules can play a role in establishing social norms.[245] These social norms, in turn, may influence private ordering behavior in situations where the law does not directly apply.[246] Given intellectual

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243. *See generally* JAMES A. LEWIS, CTR. FOR STRATEGIC & INT'L STUDIES, INTELLECTUAL PROPERTY PROTECTION: PROMOTING INNOVATION IN A GLOBAL INNOVATION ECONOMY (2008). *But see, e.g.*, Lisa Larrimore Ouellette, *Patentable Subject Matter and Non-Patent Innovation Incentives*, 5 U.C. IRVINE L. REV. 1115 (2015), (discussing alternatives to patent protection that are used to promote innovation in the United States including regulatory incentives, government grants, and tax incentives); Camilla A. Hrdy, *Patent Nationally, Innovate Locally*, 31 BERKELEY TECH. L.J. 1301, 1303–04 (2016) (describing various alternatives to intellectual property in order to generate innovation).

244. In a related vein, Anthony Casey and Andres Sawicki discuss how informal norms contribute to collaborative creative endeavors and the implications of their model for various copyright doctrines. *See generally* Anthony J. Casey & Andres Sawicki, *Copyright in Teams*, 80 U. CHI. L. REV. 1683 (2013) (discussing how informal norms influence collaborative creative projects); *see also* Paul J. Heald, *A Transaction Cost Theory of Patent Law*, 66 OHIO ST. L.J. 473 (2005) (analyzing how patent law can facilitate team production); Dan L. Burk & Brett H. McDonnell, *The Goldilocks Hypothesis: Balancing Intellectual Property Rights at the Boundary of the Firm*, 2 U. ILL. L. REV. 575 (2007) (expanding on Paul Heald's hypothesis and proposing that IP rights need to be properly calibrated to optimally promote team production).

245. Graeme B. Dinwoodie, *Private Ordering and the Creation of International Copyright Norms: The Role of Public Structuring*, 1 J. INSTITUTIONAL & THEORETICAL ECON. 160, 163 (2004).

246. *Id.* For instance, private ordering schemes constantly face the threat of increased public oversight if the outcomes they provide are not politically and socially acceptable. This threat likely influences how private ordering plays out. *Id.*; *see also generally* Elickson, *supra* note 184 (explaining that ranchers in Shasta County, California settle disputes primarily through social norms but describing how the presence of legal rules interacts with and influences these norms); Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950 (1979) (describing how the presence of legal rules influences personal negotiations in the divorce context).

property's status as the primary legal vehicle for promoting innovation, any other regime designed to promote innovation, whether public or private, will likely take its cue from the norms and values espoused by the intellectual property system. If the intellectual property system operates in a way that generally promotes innovation–enhancing values, it can help establish social norms that encourage private firms to act similarly. Conversely, if the intellectual property system ignores the psychological needs of creators, it may be even more unrealistic to expect private companies to address these needs.

One straightforward area where intellectual property could better meet creator needs that promote innovation is the area of attribution. Attribution for creative work promotes perceptions of competence and facilitates social exchange.[247] Catherine Fisk has pointed out that attribution plays a critical role in career development,[248] which implicates autonomy and other creativity–enhancing values.[249] Many studies have highlighted how attribution motivates individuals to engage in creative work.[250] Given the benefits of attribution for creativity, companies should provide this benefit to their creative employees.[251]

Intellectual property can help with this. A system that grants meaningful attribution to individual creators (and not just their corporate assigns),[252]

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247. Bair, *supra* note 13, at 349; *see also supra* Section III.A.

248. Fisk, *supra* note 178, at 62–65.

249. *See supra* Section III.A. Having a degree of control over your career trajectory not only implicates autonomy, it also may indirectly affect other creativity–enhancing values like variety and balance. The control afforded by appropriate attribution provides employees with more options, better allowing them to choose career paths that meet their creativity–based needs.

250. *See, e.g.*, Bair, *supra* note 13, at 319–21 (describing some of these studies).

251. *See* Fisk, *supra* note 178, at 54–57.

252. By granting attribution rights to creators through intellectual property, policymakers not only indirectly promote innovation—by establishing social norms that firms will hopefully adopt for their employees—but they also directly promote innovation by enhancing feelings of competence and fairness in inventors who do not work for companies and own the intellectual property rights in their creations. *See* Fromer, *supra* note 1, at 1790–98 (discussing how a stronger attribution right in intellectual property could act as an "expressive incentive" for inventors); Bair, *supra* note 13, at 349 (discussing how attribution in intellectual property could enhance creator motivation and creativity). This is not the current norm for intellectual property regimes in the United States. In copyright, there is no general entitlement to attribution for creators. Elisa Vitanza, Comment, Castle Rock Entertainment, Inc. v. Carol Publishing Group, Inc., 14 BERKELEY TECH. L.J. 43, 43 n.2 (1999). And when a work is considered a "work for hire" the copyright registration lists the employer, rather than the actual author, as the creator. Fromer, *supra* note 1, at 1796. Patent law requires that the actual inventors be listed on a patent regardless of who owns

could contribute to a social norm of giving creators credit for their work.[253] This social norm, in turn, could generate an expectation among employee–creators that they will receive meaningful attribution for their contributions in the employment context. It could also make companies more amenable to granting this attribution, as they come to understand that this is simply the way things are done.

To make this contribution, the IP system needs to provide for creator attribution in a more meaningful way than it does currently. Others have discussed how this might be achieved.[254] For example, as a first small step, copyright law could be reformed so that actual authors are named in registration statements for works made for hire.[255] This would help establish a social norm for attribution and would send the message to companies that regardless of who owns the intellectual property, creators should be recognized for their work. And though current patent doctrine requires inventors to be named on the patent regardless of patent ownership (a form of attribution), scholars have written about how attribution for patent owners could be made more robust as well.[256] This more robust attribution right could be given to creators independent of the right to exclude, which under current practice, and for efficiency reasons, generally resides with employers.[257]

In attempting to nudge companies towards more attribution for its creative employees, IP will face certain obstacles. Companies may be reluctant to publically advertise the successes of their star employees, for

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the intellectual property, but given that only those who look at the patent (rather than the wider audience of those who might use the technology the patent embodies) will see this information, the value of this attribution as a creativity–motivating tool is questionable. Fromer, *supra* note 1, at 1792–95; *see also* Bair, *supra* note 13, at 350.

253. *See supra* notes 245–246 and accompanying text (describing how legal entitlements can influence social norms).

254. *See, e.g.*, Fromer, *supra* note 1, at 1790–98; Bair, *supra* note 13, at 349–50; JESSICA SILBEY, THE EUREKA MYTH: CREATORS, INNOVATORS, AND EVERYDAY INTELLECTUAL PROPERTY, 159–67 (2015); Colleen V. Chien, *Beyond Eureka: What Creators Want (Freedom, Credit, and Audiences) and How Intellectual Property Can Better Give it To Them (by Supporting Sharing, Licensing, and Attribution)*, 114 MICH. L. REV. 1081 (2016) 1105–07 (reviewing THE EUREKA MYTH). *But see* Christopher Jon Sprigman et al., *What's a Name Worth?: Experimental Tests of the Value of Attribution in Intellectual Property*, 93 B.U. L. REV. 1389, 1426–32 (2013) (discussing the costs of a default attribution right in intellectual property)

255. *See* Fromer, *supra* note 1, at 1794–98.

256. *See, e.g.*, Fromer, *supra* note 1, at 1810–1817; Bair, *supra* note 13, at 349–50.

257. *See* Fromer, *supra* note 1, at 1794–98 (arguing for an attribution right independent of the pecuniary rights intellectual property provides).

fear that they will be poached by competitors. And there could be technical challenges in deciding who deserves attribution when the work has been accomplished, as it often is in companies, by teams rather than a single individual. Many companies have succeeded in overcoming these challenges, however, and have devised innovative, and creativity-enhancing, means of providing attribution to their employees.[258]

And even if IP, through this indirect norm–promoting function, does not completely succeed in pushing all companies towards more robust attribution for the reasons just mentioned, it still promises to *directly* benefit creators and help overcome some of the problems encountered by employees of companies that have not yet adopted innovation-friendly policies.[259] For instance, through an IP–based system of attribution, employee–creators could achieve reputational benefits beyond their firms, enhancing innovation–promoting feelings of autonomy and competence. This could also lessen employees' reliance on employers for favorable references and increase their mobility,[260] thereby allowing employees to more freely express their preferences for firms that promote, rather than stifle, the creative impulses of their employees.

VII. CONCLUSION

Most innovation today results from the creative work of company employees. Despite this well–known reality, innovation scholars have largely overlooked the critical question of whether employees are receiving optimal innovation incentives. Many have trusted, without analysis, that private ordering will sort things out.

This Article challenges that assumption. Turning to the psychology and organizational behavior literature, this Article identifies several principles known to promote employee creativity. The fact that many successful companies have adopted policies that run counter to these principles suggests that the market is not doing its job in getting the right incentives to employees. The Article further supports this conclusion by identifying

258. *See, e.g.*, Silbey, *supra* note 254, at 159–67; Fisk, *supra* note 178, at 67–98; *see also* Anthony J. Casey & Andres Sawicki, *The Problem of Creative Collaboration*, 58 WM. & MARY L. REV. 1793, 1842–43 (2017) (proposing a model by which credit can be appropriately allocated in a team situation).

259. *See Supra* note 252.

260. *See* Fisk, *supra* note 178, at 111–15 (discussing credit and attribution's crucial role in career development). Rather than an intellectual–property–based right to attribution, Fisk argues that a right to attribution should be an implied term of employment agreements. *Id.*

common circumstances from law and economics theory, present here, that make market failure more likely.

The Article uses these explanations for market failure from law and economics theory, including problems with bounded rationality, distributional concerns, and information asymmetries, to craft an appropriate legal and policy response. Given the benefits of private ordering, the best response is one that addresses these specific problems while maintaining private ordering's advantages. A debiasing approach, in the behavioral law and economics tradition, is best suited to this task, and can be achieved through metrics and certifications programs, along with adjustments to employment and intellectual property law. The ultimate goal of these interventions is better company decision–making for a world with less employee dissatisfaction and wasted talent and more socially–beneficial innovation.

COMPETITION AND PIRACY

Gregory Day†

ABSTRACT

Intellectual property infringement has been characterized by over two hundred years of judicial opinions and scholarly writings as a socially destructive behavior akin to theft and trespassing. Modern intellectual property laws are faithful to this approach, punishing those who willfully infringe upon patent rights with treble damages and remedying acts of copyright infringement with statutory damages and, in some instances, prison time. This Article argues, however, that deterring infringement with such hyper–compensatory remedies squanders the benefits of piracy. Using an economic framework, certain acts of infringement are shown to increase society's level of innovation and efficiency in ways that the law should—but does not currently—encourage. From a conceptual standpoint, infringement should be reframed as a rational response to intellectual property's anticompetitive structure, as opposed to a normatively bad behavior.

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I. INTRODUCTION

Intellectual property infringement has been characterized by over two hundred years of judicial opinions and scholarly writings as a socially destructive behavior[1] akin to stealing[2] or trespassing.[3] For example, the earliest U.S. patent and copyright statutes sought to deter almost every instance of infringement using punitive remedies.[4] Today's intellectual property laws have remained faithful to the spirit of this approach, punishing those who willfully infringe upon another's patent rights with treble (i.e. triple) damages[5] and remedying acts of copyright infringement with statutory damages and, in some instances, prison time.[6]

To illustrate intellectual property's hyper–compensatory remedies, consider the case of *Feather v. Adobe Systems*[7] in which a jury found the defendant Michael Feather liable of making and distributing twenty–eight

1. Stimpson v. Railroads, 1 Wall. Jr. 164 (1847) ("Before 1836, the law compelled the court to treble the 'actual damages' found by the jury. This was intended, no doubt, to punish the defendant . . . ."); *cf.* Halo Elecs., Inc. v. Pulse Elecs., Inc., 136 S. Ct. 1923, 1926 (2016) ("Here, 180 years of enhanced damages awards under the Patent Act establish that they . . . are instead designed as a sanction for egregious infringement behavior.").

2. Roemer v. Logowitz, 20 F. Cas. 1093, 1096 (C.C.D.N.J. 1871) ("[H]e meanly attempted to enrich himself at the public expense by stealing the product of other men's brains . . . ."); *cf.* Irina D. Manta, *The Puzzle of Criminal Sanctions for Intellectual Property Infringement*, 24 HARV. J.L. & TECH. 469 (2011) (discussing how the likening of infringement to stealing is often used to justify criminal sanctions for infringers).

3. Smith v. Woodruff, 22 F. Cas. 703, 704 (D.C. 1873) ("Damages are claimed by the plaintiff for the alleged infringement of certain letters patent, and he instituted for that purpose an action of trespass on the case . . . ."); *cf.* Odin B. Roberts, *Contributory Infringement of Patent Rights*, 12 HARV. L. REV. 35, 39 (1898) (comparing infringement to trespassing).

4. *See, e.g.*, Patent Act of 1790, ch. 7, 1 Stat. 109–12 (requiring the court to remedy acts of infringement with treble damages in every instance in order to punish and deter acts of infringement); Oskar Liivak, *When Nominal is Reasonable: Damages for the Unpracticed Patent*, 56 B.C. L. REV. 1031, 1044 (2015) ("The [Patent] Act of 1793 instructs that 'the infringer should forfeit and pay to the patentee a sum equal to three times the price for which the patentee has usually sold or licensed to other person the use of said invention.'"); Pamela Samuelson & Tara Wheatland, *Statutory Damages in Copyright Law: A Remedy in Need of Reform*, 51 WM. & MARY L. REV. 439, 444 n.19 (2009) ("Under the 1790 Act, the per sheet remedy was explicitly penal in nature . . . This penalty was fixed in one set amount without any regard to the actual damage incurred or the justice of that award as applied in a particular case.").

5. 35 U.S.C. § 284 (2012) ("[T]he court may increase the damages up to three times the amount found or assessed.").

6. 17 U.S.C. § 504 (2012) (establishing the statutory and actual damages used to remedy copyright infringement); 18 U.S.C. § 2319 (2012) (providing up to five and ten years in prison for certain offenses).

7. 895 F. Supp. 2d 297 (D. Conn. 2012).

unauthorized copies of programs copyrighted by Adobe Systems.[8] Mr. Feather infringed the copyrights by burning Adobe programs onto rewritable compact discs to sell on eBay.[9] Even though most Adobe programs retailed for only about $150, the court calculated Adobe's royalty rate at *$90,000 per infringed item*, ordering Mr. Feather to pay a $2.52 million award.[10] Similarly in *Novozymes v. Genencor*,[11] the owner of an infringed patent received an enhanced $4 million award despite a paucity of evidence that the patentee had suffered any actual damages.[12] In both cases, the courts affirmed royalty awards that far exceeded the injuries incurred by either the patent or copyright holder.[13]

Although meant to protect the monopoly rights conferred by patents and copyrights,[14] commentators criticize this system as being economically inefficient.[15] Indeed, the severity of penalties used to remedy acts of infringement may so effectively shield patented and copyrighted goods from competition that holders are incentivized to gouge the market[16] or

8. *Id.* at 301.

9. *Id.*

10. *Id.* at 303. Adobe sought statutory damages instead of actual damages. *Id.* The court also granted a permanent injunction preventing Mr. Feather from continuing his infringing activities. *Id.*

11. 474 F. Supp. 2d 592 (D. Del. 2007).

12. The company Novozymes does not use its patented technology but, instead, licenses the patent to other companies within its corporate family. The court ruled that the licensees lacked standing to sue for patent infringement leaving no companies in the lawsuit able to demonstrate actual damages resulting from the infringer's conduct. *Id.* at 604, 609.

13. *Feather*, 895 F. Supp. 2d at 303–05 (using remedies meant to punish the infringer to, in part, deter others from committing similar acts); *Novozymes*, 474 F. Supp. 2d at 610–11 (granting the patentee enhanced damages meant to punish willful infringement); *see also* UMG Recordings, Inc. v. MP3.com, No. 00 Civ. 472 (JSR), 2000 WL 1262568, at *1, *6 (S.D.N.Y. Sept. 6, 2000) (issuing the plaintiff whose copyrighted music had been "ripped" statutory royalties entailing $25,000 per CD, resulting in a $118 million award "despite the absence of any evidence of actual harm to the plaintiffs or profits of the defendant"); Samuelson & Wheatland, *supra* note 4, at 442.

14. United Shoe Mach. Corp. v. United States, 258 U.S. 451, 463 (1922) ("From an early day it has been held by this court that the franchise secured by a patent consists only in the right to exclude others from making, using, or vending the thing patented without the permission of the patentee."); Fox Film Corp. v. Doyal, 286 U.S. 123, 127 (1932) ("The owner of the copyright, if he pleases, may refrain from vending or licensing and content himself with simply exercising the right to exclude others from using his property.").

15. *See, e.g.*, CHRISTINA BOHANNAN & HERBERT HOVENKAMP, CREATION WITHOUT RESTRAINT xiv (2011) (explaining, in the context of the innovative/anticompetitive trade off, that "[t]he patent system is in a crisis of overissuance, overprotection, and excessive litigation . . . . The future is bleaker for copyright law.").

16. Rebecca S. Eisenberg, *Technology Transfer and the Genome Project: Problems with Patenting Research Tools*, 5 RISK: HEALTH SAFETY & ENV'T 163, 168–69 (1994)

adopt even greater anticompetitive behaviors, including tying arrangements,[17] refusals to license,[18] sham infringement lawsuits,[19] and patent pools.[20] And since intellectual property promotes the precise behaviors that antitrust law prohibits—i.e. monopolies and trade restraints[21]—the limited antitrust immunity that the courts have granted rights holders[22] may further exacerbate intellectual property's

("During the patent term, firms can charge monopoly prices, and thereby earn an enhanced return on their development costs and compensation for their risks.").

17. Under certain circumstances, a tying arrangement is illegal. *See* Ill. Tool Works Inc. v. Indep. Ink, Inc., 547 U.S. 28, 35 (2006) (noting that a tying arrangement is illegal when the patent holder possesses sufficient market power, but not otherwise). *See generally* Melissa Hamilton, *Software Tying Arrangements Under the Antitrust Laws: A More Flexible Approach*, 71 DENV. U. L. REV. 607, 608 (1994) ("In a tying arrangement, the seller agrees to sell one product, referred to as the tying product, on the condition that the purchaser also buy from the seller a different product, referred to as the tied product.").

18. *See, e.g.*, United States v. Studiengesellschaft Kohle, M.B.H., 670 F.2d 1122, 1127 (D.D.C. 1981) ("A patentee has the right to exclude others from profiting from the patented invention. This includes the right to suppress the invention while continuing to prevent all others from using it, to license others, or to refuse to license . . . .") (internal citation omitted).

19. *See, e.g.*, Prof'l Real Estate Inv'rs, Inc. v. Columbia Pictures Indus., Inc., 508 U.S. 49 (1993) (examining "sham litigation" in the copyright context).

20. *See, e.g.*, Nero AG v. MPEG LA, L.L.C., No. 10-cv-3672-MRP-RZ, 2010 WL 4366448, at *1, *1 (C.D. Cal. Sept. 14, 2010) (explaining the nature of a patent pool); Justin R. Orr, *Patent Aggregation: Models, Harms, and the Limited Role of Antitrust*, 28 BERKELEY TECH. L.J. 525, 552 n.151 (2013) (describing the innovation–harming effects of patent pools); Michael Mattioli, *Patent Pool Outsiders*, 33 BERKELEY TECH. L.J. (forthcoming 2018) (describing the benefits of operating outside of patent pools despite the presence of pooled competitors).

21. Erik Hovenkamp & Thomas F. Cotter, *Anticompetitive Patent Injunctions*, 100 MINN. L. REV. 871, 871 (2016) (discussing the "deliberate tradeoff" that patents present whereby a patent pursues long–term economic growth via innovation while sacrificing short–term efficiency by issuing monopoly rights and other exclusionary privileges); *see also* Marius Schwartz, *Licensing Restrictions on Fields of Use Vs. Adjacent Markets: A Potential Economics Basis for Differential Legal Treatment*, 66 N.Y.U. ANN. SURV. AM. L. 435, 440 (2011) (offering an example of how incentivizing innovation can also reduce overall efficiency).

22. *See, e.g.*, FTC v. Actavis, Inc., 133 S. Ct. 2223, 2238 (2013) (Roberts, C.J., dissenting) (discussing patents as an exception to antitrust law: "[t]he point of antitrust law is to encourage competitive markets to promote consumer welfare. The points of patent law is to grant limited monopolies . . . . In doing so it provides an exception to antitrust law, and the scope of the patent—i.e., the rights conferred by the patent—forms the zone within which the patent holder may operate without facing antitrust liability."); *see also* Marina Lao, *Unilateral Refusals to Sell or License Intellectual Property and the Antitrust Duty to Deal*, 9 CORNELL J.L. & PUB. POL'Y 193, 193 (1999) ("Courts and academics alike considered intellectual property rights as exceptions to the antitrust law that must be narrowly construed.").

anticompetitive nature.[23] As a result, critics contend that rewarding content owners with such lucrative damages awards belies the goals of patent and copyright laws since "the primary purpose of our [intellectual property system] is *not* the creation of private fortunes for the owners of patents" and copyrights but instead "the Progress of Science and useful Arts."[24]

Puzzlingly though, the record indicates—in contrast to popular logic and scholarship—that holders generally embrace fair, competitive, and efficient business strategies despite wielding monopoly rights.[25] In many instances holders modify their behaviors to compete *more* fairly when they could otherwise use their intellectual property rights to gouge the market.[26] Take the music industry, for example, which resisted selling individual tracks of music, instead bundling songs together in the form of albums.[27] Because the industry's copyrights prevented competitors from selling songs individually, consumers were compelled to purchase unwanted tracks.[28]

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23. *See* Jay P. Kesan & Carol M. Hayes, *FRAND's Forever: Standards, Patent Transfers, and Licensing Commitments*, 89 IND. L.J. 231, 235 (2014) (noting that patent rights may even hinder innovation); Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1817 (1984) (arguing that intellectual property rights by definition are monopolies that come at a competitive cost to society due to the manner in which they limit competition).

24. U.S. CONST. art. I, § 8, cl. 8 ("To promote the Progress of Science and useful Arts, by securing limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."); Quanta Comput., Inc. v. LG Elecs., 553 U.S. 617, 626 (2008) (emphasis added); *see also* William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 385, 391 (2016) (explaining that patent law is primarily intended to spark innovation, not for inventors to profit); Janet Freilich, *The Uninformed Topography of Patent Scope*, 19 STAN. TECH. L. REV. 150, 150 (2015) (remarking that the ideal patent scope is the "minimum amount of scope necessary to incentivize innovation").

25. *See* Herbert Hovenkamp, *Restraints on Innovation*, 29 CARDOZO L. REV. 247, 248 (2007) (explaining that anticompetitive behaviors based upon IP rights rarely violate antitrust laws and that the supposed conflict between the two bodies of law is overstated).

26. *See, e.g.*, Jorge L. Contreras, *A Market Reliance Theory for FRAND Commitments and Other Patent Pledges*, 2015 UTAH L. REV. 479, 480 (2015) (discussing the pledge to which some patentees agree to make their patents available on "fair, reasonable, and non-discriminatory (FRAND) terms"); Clark D. Asay, *The Informational Value of Patents*, 31 BERKELEY TECH. L.J. 259, 261 n.6 (2016) (recognizing that the "literature on FRAND commitments is voluminous").

27. *See* Dorian Lynskey, *How the Compact Disc Lost Its Shine*, GUARDIAN (May 28, 2015, 1:39 PM), http://www.theguardian.com/music/2015/may/28/how-the-compact-disc-lost-its-shine; *see generally* Jeffrey Philip Wachs, *The Long-Playing Blues: Did the Recording Industry's Shift from Singles to Albums Violate Antitrust Law?*, 2 U.C. IRVINE L. REV. 1047, 1058 (2012) (explaining the motivation for and economics of the record industry decision to bundle singles into albums).

28. *See* Bill McConnell, *Copyright Debate Has New Tune in the Age of Streaming*, DEAL PIPELINE (Aug. 1, 2014), http://www.thedeal.com/content/regulatory/copyright-

However, without any changes to copyright law, the record labels decided to sell individual tracks at lower prices shortly after online pirates began distributing digital infringing tracks over the Internet.[29] Why would a monopolist like the music industry embrace competition when its prior practices were both lucrative and shielded by copyright protections?

This Article argues that patent and copyright owners tend to resist acting as anticompetitively as their intellectual property rights would allow due to procompetitive effects of piracy. Using an economics framework, this Article shows that certain acts of infringement increase society's level of innovation and efficiency in ways that the law should—but does not currently—encourage, indicating the law squanders the benefits of piracy. From a conceptual standpoint, infringement should be recast as a rational response to intellectual property's anticompetitive structure as opposed to a normatively bad act.

As will be demonstrated, a patented or copyrighted good sold at an excessively above market premium creates demand for a cheaper infringing version. Because the law can only abate so much piracy, a holder's best strategy is generally to lower prices or shed other anticompetitive behaviors in order to reclaim their market space.[30] This phenomenon, in the aggregate, increases efficiency by encouraging holders to discipline the extent of their exclusionary activities. In the music industry, it was the distribution of pirated songs that caused the record companies to unbundle their albums using competing online platforms, thereby becoming more competitive and innovative.[31] Society may therefore need a level of piracy to keep markets from becoming overly anticompetitive.

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debate-has-new-tune-in-the-age-of-streaming.php (providing background information about the use and utility of copyright protections in the music industry).

29. *See* Paul Resnikoff, *What Really Killed the CD?*, DIGITAL MUSIC NEWS (Aug. 20, 2014), http://www.digitalmusicnews.com/2014/08/20/really-killed-cd/ (providing an overview of the diminishing sales of compact discs).

30. *See, e.g.*, Ernesto Van der Sar, *Kanye West's the Life of Pablo Sparks Piracy Craze*, TORRENTFREAK (Feb. 16, 2016), https://torrentfreak.com/kanye-wests-the-life-of-pablo-piracy-160216/; Sarah Perez, *Kanye West's New Album, 'The Life of Pablo,' Is No Longer a Tidal Exclusive*, TECHCRUNCH (Apr. 1, 2016), https://techcrunch.com/2016/04/01/kanye-wests-new-album-the-life-of-pablo-is-no-longer-a-tidal-exclusive/. Kanye West's album *The Life of Pablo* was exclusively released on Tidal, which led to elevated levels of piracy. *Id.* Within a couple months, the album was made available over Apple, Spotify, and other services. *Id.*

31. *iTunes at 10: How Apple's Music Store Has Transformed the Industry*, N.Y. DAILY NEWS (Apr. 24, 2013, 3:37 PM), http://www.nydailynews.com/entertainment/music-arts/itunes-transformed-music-industry-article-1.1326387 (quoting one music executive as saying "[t]he sky was falling, and iTunes provided a place where we were

As a consequence, the intellectual property system must be recalibrated to emphasize innovation over the preferences of content owners. Intellectual property's heavy–handed remedies favor the right to exclude so heavily over innovation and growth—which are intellectual property's actual objectives—that even the most economically beneficial acts of piracy tend to be impeded.[32] In fact, the remedies for infringement can *reward* holders for being anticompetitive. The court in *Monsanto v. Ralph*[33] amplified Monsanto's royalty rate into a $2.5 million award after considering evidence that Monsanto, as a matter of course, refuses to license its patents to competitors—a policy that stifles competition and blocks innovation.[34] Because of this, many holders find it more profitable to sue others for infringement than to practice their patented or copyrighted art.[35] This Article advocates in favor of a market for infringement which would incentivize parties to infringe and pay damages when a holder has become excessively anticompetitive.[36] Such a system would not only stimulate innovation and generate efficiency, it would also advance the direction in which intellectual property has already begun to evolve but via a modified path.[37]

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going to monetize music and in theory stem the tide of piracy. So, it was certainly a solution for the time.").

32. Walker v. Forbes, Inc., 28 F.3d 409, 412 (4th Cir. 1994) ("[T]he law makes clear that there is no gain to be made from taking someone else's intellectual property without their consent.").

33. 382 F.3d 1374 (Fed. Cir. 2004).

34. *Id.* at 1384 (reasoning that a reasonable royalty can deprive an infringer of more than its prospective profits when the patentee is an unwilling licensor).

35. Erik Roger & Young Jeon, *Inhibiting Patent Trolling: A New Approach for Applying Rule 11*, 12 NW. J. TECH. & INTELL. PROP. 291, 295 (2014) ("There has been an alarming rise in the number of litigious entities—commonly referred to as patent trolls or non-practicing entities (NPEs)—that make no products but file dubious patent infringement lawsuits merely to extract money from commercially productive companies.").

36. *See* Robert P. Merges, *Contracting Into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1302 (1996) (discussing how IP could orient around liability rules that would allow one to infringe and pay damages, rather than guaranteeing a patent or copyright owner's right to exclude).

37. Governed from a property rules framework, the courts used to grant permanent injunctions as a matter of course to remedy acts of infringement in order to prevent infringement in nearly every instance. In *eBay v. MercExchange*, the Supreme Court limited the use of injunctions, effectively allowing certain infringers to continuously infringe so long as they pay damages. Such a development may have initiated a fundamental shift whereby intellectual property rights are governed by liability rules, under which parties may freely breach or infringe so long as they pay the attendant damages. eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388, 392 (2006); *see also* Daniel Crane, *Intellectual Liability*, 88 TEX. L. REV. 253, 254 (2009).

This Article proceeds in seven parts. Part I has introduced the piracy puzzle. Part II traces the legal history of intellectual property rights and remedies in order to explore the choices embodied in today's intellectual property laws. Part III assesses the innovative and anticompetitive effects of deterring infringement with, in many instances, punitive remedies. Part IV explains that intellectual property rights do not undermine markets as much as they logically could because piracy is a rational and ameliorative response to intellectual property's anticompetitive structure. Part V illustrates piracy's competitive effects using case studies from the smartphone, pharmaceutical, and movie industries. Part VI offers policy suggestions about how to incorporate infringement's procompetitive effects into the remedy scheme used to incentivize innovation. Part VII concludes.

II. THE HISTORICAL TRAJECTORY OF INTELLECTUAL PROPERTY RIGHTS

The modern intellectual property system remedies acts of infringement in a manner consistent with the earliest U.S. patent and copyright statutes. Of particular salience is the way, shortly after the Constitution's ratification, the law began to characterize patents and copyrights as forms of property, departing from the approach derived in seventeenth and eighteenth century England.[38] Considering the Framers' reverence of property ownership, these nascent intellectual property laws punished infringers for engaging in what the courts, legislatures, and commentators considered to be an antisocial behavior.[39] In light of piracy's negative connotation, this Part explains how deterring infringement with stiff penalties has remained a central feature of patent and copyright laws.

A. HISTORICAL AND MODERN PATENT SYSTEMS

Before the modern U.S. patent system, colonial and pre–constitutional patent laws mirrored English common law, granting monopolies in the industrial and manufacturing sectors on a discretionary basis.[40] In

38. *See* Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 348–49 (2009).

39. Adam Mossoff, *Patents as Constitutional Private Property: The Historical Protection of Patents Under the Takings Clause*, 87 B.U. L. REV. 689, 706 (2009) ("[T]he Framers empowered Congress, not the Executive, to secure an inventor's rights—placing this constitutional provision in Article I, not in Article II—which suggested they viewed patents as important property rights secured by the people's representatives.").

40. *See* Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 CORNELL L. REV. 953, 967 (2007).

eighteenth century England, those tasked with granting patents sought to determine whether an application was likely to promote the Queen's economic prerogatives.[41] As such, an English patent during the early modern era was considered a "privilege" because it not only created an exception to the general ban against monopolies but also an affirmative duty to use the patent.[42] The discretionary issuance of patents continued beyond the U.S. Constitution's ratification through the first set of American Patent Acts.[43] Because reviewing each patent application overwhelmed the patent board,[44] the U.S. Patent Act of 1836 changed course by issuing patents as a matter of right, meaning that an applicant who satisfied the statutory description of a patent was entitled to one.[45] By making patents a type of property right as well as establishing the Patent and Trademark Office, the American patent system began to modernize.[46] No longer were patents considered privileges with an affirmative duty to use, but instead they became a property interest embodying, specifically, the right to exclude.[47] Other property concepts soon entered the intellectual property lexicon, including the license and assignment of patents.[48]

Because the Framers held such a sacrosanct view of property ownership, the first patent acts deterred infringement by imposing costs on infringers that exceeded the harms inflicted.[49] Both the Patent Acts of 1790 and 1793 required infringers to pay treble damages in *every* instance, offering no

41. *See* Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550–1800*, 52 HASTINGS L.J., 1255, 1255 (2001).

42. *See* Edward C. Walterscheid, *Inherent or Created Rights: Early Views on the Intellectual Property Clause*, 19 HAMLINE L. REV. 81, 83 (1995).

43. *See* Oren Bracha, *The Commodification of Patents 1600-1836: How Patents Became Rights and Why We Should Care*, 38 LOY. L.A. L. REV. 177, 216–18 (2004) (asserting that the Constitution's Framers intended the IP Clause to continue the English patent and grant system).

44. *Id.* at 227; Mossoff, *supra* note 40, at 967–68.

45. Bracha, *supra* note 43, at 227.

46. *See* Mark A. Lemley, *Why Do Juries Decide if Patents are Valid?*, 99 VA. L. REV. 1673, 1697 (2013).

47. *See* Julie S. Turner, *The Nonmanufacturing Patent Owner: Toward a Theory of Efficient Infringement*, 86 CALIF. L. REV. 179, 181–82 (1998) ("The only right the patent system bestows is the right to exclude others from making, selling, or using the subject matter of the patent. It is often said that the social value gained from conferring the limited value of a monopoly is the required disclosure of the invention.") (internal citations omitted); Mossoff, *supra* note 40, at 990 (explaining that patents were considered "civil rights in property" derived from natural law); Bracha, *supra* note 43, at 237; Mossoff, *supra* note 38, at 349.

48. *See* Mossoff, *supra* note 38, at 353.

49. Matthew D. Powers & Steven C. Carlson, *The Evolution of the Doctrine of Willful Patent Infringement*, 51 SYRACUSE L. REV. 53, 66 (2001).

affirmative defenses for independent invention or accidental infringement.[50] The courts and scholarship followed this approach, characterizing infringement as an antisocial behavior.[51] For example, in *Seymour v. McCormick*,[52] the Supreme Court discussed certain types of patent damages as a means to "penalize wanton and malicious pirates."[53] The Court later reiterated this objective, stating that enhanced damages provide a "vindictive or punitive" function, meant to "inflict" harm upon infringers.[54]

Notably, early nineteenth century courts seldom remedied infringement using equitable remedies that are now commonplace.[55] This is because, contrary to how modern courts possess both legal and equitable powers, the judicial system in the nineteenth century divided equity and law into distinct forums.[56] A case was considered best suited for a court of law when its underlying factual dispute had yet to be resolved, which was typical among patent contests.[57] But, because holders would repetitively file the same lawsuits in concurrent state courts, patent litigation soon exhausted judicial resources.[58] In response, equitable remedies grew increasingly popular during the mid–nineteenth century, which allowed courts to rely upon the rulings and factual findings of other state courts, thereby reigning in the costs of patent litigation.[59] Slowly the permanent injunction emerged as an orthodox remedy to supplement monetary damages.[60]

This historical treatment of remedying infringement like an antisocial activity is evident in the liability minefield found in today's Patent Act. Currently, the measure of infringement damages is either a holder's lost profits or a reasonable royalty based upon a hypothetical ex ante licensing deal between the holder and infringer.[61] In light of legislative and judicial

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50. *See* Patent Act of 1790, ch. 7, 1 Stat. 109–12; Powers & Carlson, *supra* note 49, at 66; Liivak, *supra* note 4, at 1044–45 ("[T]he patentee need not show anything beyond infringement to establish the fact of compensable harm.").

51. S. REP. NO. 79-1503, at 1387 (1946) (authorizing the courts to grant attorney's fees to patentee after proving willfulness on behalf of the infringer).

52. 57 U.S. 480 (1853).

53. *Id.* at 488.

54. Tilghman v. Proctor, 125 U.S. 136, 143–44 (1888).

55. Christopher Beauchamp, *The First Patent Litigation Explosion*, 125 YALE L.J. 848, 913 (2016).

56. *Id.* at 914.

57. *Id.*

58. *Id.* at 915.

59. *Id.* at 916–18.

60. *Id.* at 918.

61. 35 U.S.C. § 284 (2012); Aqua Shield v. Inter Pool Cover Team, 774 F.3d 766, 770 (Fed. Cir. 2014) ("The value of what was taken—the value of the use of the patented technology—measures the royalty. A traditional heuristic for assessing this market value

efforts to deter infringement, such conduct is described as a strict liability tort, meaning evidence showing accidental or innocent infringement cannot excuse culpability.[62] With over 8,000,000 patents issued by the PTO—frequently to holders who have no intention of ever using their patented art—an actor who in good faith infringes upon an unused patent can be ordered to pay a substantial royalty fee.[63] Because infringement penalties are so severe, a cottage industry has emerged in which non–practicing entities, otherwise known as "patent trolls," purchase patents with the sole intention of threatening litigation to extract rents from those active in research and development.[64] If one's infringement is found to be willful, a holder's damages may be trebled to produce a windfall award.[65] A court can, in addition, issue a permanent injunction barring one from using, producing, or selling the infringing copy even if substantial resources were expended independently inventing it.[66] The American patent system's trajectory has thus firmly established a property right in patents, sanctioning acts of infringement with stringent, or even punitive, remedies.

B. HISTORICAL AND MODERN COPYRIGHT SYSTEMS

Before the American Revolutionary War, a copyright in England vested its author with a natural law right of perpetual ownership interest in a

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is to posit a hypothetical negotiation between the patentee and adjudicated infringer and to attempt to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.") (internal quotations omitted).

62. Commil USA, LLC v. Cisco Sys., Inc., 135 S. Ct. 1920, 1926 (2015).

63. Amy L. Landers, *Patent Claim Apportionment, Patentee Injury, and Sequential Invention*, 19 GEO. MASON L. REV. 471, 472 (2012) (noting that some of the largest royalty awards have been issued to non–practicing entities, which do not use their patents but only wage lawsuits with them); Liivak, *supra* note 4, at 1038.

64. Liivak, *supra* note 4, at 1062; Lemley et al, *How Often Do Non-Practicing Entities Win Patent Suits?*, 32 BERKELEY TECH. L.J. 235 (describing empirical effects of non–practicing entities on patent litigation); Nathan P. Anderson, *Striking a Balance: The Pursuit of Transparent Patent Ownership*, 30 BERKELEY TECH. L.J. 395, 396 n.5 (2015) (describing the "lively debate" over how to address patent trolls).

65. 35 U.S.C. § 284 (2012) ("[T]he court may increase the damages up to three times the amount found or assessed.").

66. 35 U.S.C. § 283 (2012) ("The several courts having jurisdiction of cases under this title may grant in accordance with the principles of equity to prevent the violation of any right secured by patent on such terms as the court deems reasonable."). A patentee may even obtain a permanent injunction against an infringer when not using the patented work. Hovenkamp & Cotter, *supra* note 21, at 875 ("*Trebro* is hardly the first case in which the Federal Circuit has stated that a patent owner whose own products do not embody its patented invention may obtain an injunction against a competitor whose products allegedly *do* embody that invention." (quoting Trebro Mfg, Inc. v. FireFly Equip., LLC, 748 F.3d 1159 (Fed. Cir. 2014) (emphasis in original))).

creative work.[67] In the United States, Congress enacted the original American copyright act in 1790, which was derived from the first modern copyright statute: the English Statute of Anne.[68] This system established a term limit for a copyrighted work after which time the work would enter the public domain, vesting its author with a time–limited interest in the copyright instead of an inherent right to the art.[69] As the American copyright began to represent a property right, the Congress and courts sought to preserve this right with rather uncompromising remedies.[70]

Indeed, the remedies for copyright infringement tend to be, like patent remedies, "not only punitive in effect, but punitive in intent."[71] From the 1909 Copyright Damages Act to today's copyright statute, a copyright holder who has proven infringement can sue an infringer for either statutory damages or actual damages plus the infringer's profits.[72] By including the infringer's profits into the equation, Congress sought to eliminate any possible economic benefit of infringement in order to deter every instance of piracy.[73] Statutory damages are perhaps even more punitive,[74] ranging from $750 to $30,000 per act for non–willful infringement and reaching up to $150,000 per act for willful infringement.[75] Whether to grant a higher or lower award is based upon the court's discretionary view of fairness with

67. Oren Bracha, *The Statute of Anne: An American Mythology*, 47 HOUS. L. REV. 877, 889 (2010) (describing the perpetual character of natural law patents in England before the Statute of Anne).

68. Eldred v. Ashcroft, 537 U.S. 186, 232 (2003).

69. *See* Suntrust Bank v. Houghton Mifflin Co., 268 F.3d 1257, 1262 (11th Cir. 2001) (noting that before the U.S. copyright system came into being, England's natural law copyright jurisprudence provided "the right of perpetual publication" which "implied an ownership in the work itself").

70. *See* Basic Books, Inc. v. Kinko's Graphics Corp., 758 F. Supp. 1522, 1529 (S.D.N.Y. 1991) ("For almost 300 years, American law has protected intellectual property rights through the copyright law. The protection derives from the English Statute of Anne, the first statute to recognize the right of authors.") (internal citation omitted); *see also* H. Tomas Gomez-Arostegui, *Copyright at Common Law in 1774*, 47 CONN. L. REV. 1, 47 (2014).

71. Samuelson & Wheatland, *supra* note 4, at 446.

72. 17 U.S.C. § 504(a) (2012); AF Holdings LLC v. Bossard, 976 F. Supp. 2d 927, 930 (W.D. Mich. 2013) ("The owner of a copyright may collect either actual damages or statutory damages from an infringer.").

73. Walker v. Forbes, Inc., 28 F.3d 409, 412 (4th Cir. 1994) ("By stripping the infringer not only of the licensing fee but also of the profit generated as a result of the use of the infringed item, the laws makes clear that there is no gain to be made from taking someone else's intellectual property without their consent.").

74. Samuelson & Wheatland, *supra* note 4, at 445.

75. 17 U.S.C. § 504(c)(1–2) (2012).

little in the statute or case law to guide the decision.[76] Given that statutory damages can arbitrarily produce awards far surpassing a holder's actual injury, a common sentiment is that statutory damages produce "inconsistent, unprincipled, and sometimes grossly excessive" results.[77]

Beyond civil damages, more than 200 people are typically incarcerated each year for copyright infringement.[78] Congress enacted the first statute criminalizing infringement in 1897.[79] Since then, the punishments for criminal copyright infringement have progressively increased in severity, especially after the rise of pirated digital music.[80] Currently, if one willfully infringes upon another's copyright for pecuniary gain, federal law can penalize the perpetrator with a one–to–five year prison sentence and a fine.[81] The defendants in *United States v. Slater*,[82] for example, pled guilty to reproducing copyrighted software—potentially infringing upon 30,000 copyrights—and received federal sentences ranging from six months to two years.[83]

But perhaps such rigid patent and copyright remedies create undesirable externalities. The next Part explores the economics of the right to exclude, explaining why intellectual property promotes both innovative and anticompetitive behaviors.

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76. *See* Samuelson & Wheatland, *supra* note 4, at 441 ("U.S. copyright law provides scant guidance about where in that range the award should be made. . . . One might have expected courts to develop a jurisprudence to guide them . . . Unfortunately, this has not yet happened.").

77. *Id.*

78. Collin R. McHenry, *A Comparative Analysis of Copyright Evolution and Enforcement in Taiwan and the United States*, MCHENRY L. FIRM (Dec. 5, 2016), http://mchenry-law.com/comparative-analysis-copyright-evolution-enforcement-taiwan-united-states/ ("In the United States, copyright infringement criminal convictions peaked at 224 in 2007 . . . .").

79. Eldar Haber, *The Criminal Copyright Gap*, 18 STAN. TECH. L. REV. 247, 248 (2015).

80. *Id.* at 251, 257–58 (explaining that before the digital age, criminal copyright statutes could impose a 1–year sentence on an infringer while in the digital age, Congress has sought to increase the penalties).

81. 17 U.S.C. § 506(a)(2) (2012); 18 U.S.C. § 2319(c)(1) (2012) (violations of Section 506(a)(2) are punishable by Section 2319: "(1) shall be imprisoned not more than 5 years, or fined in the amount set forth in this title, or both, if the offense consists of the reproduction or distribution, including by electronic means, during any 180-day period, of at least 10 copies or phonorecords, of 1 or more copyrighted works, which have a total retail value of more than $2,500.").

82. 348 F.3d 666 (7th Cir. 2002).

83. *Id.* at 668.

III. THE INNOVATIVE AND ANTICOMPETITIVE EFFECTS OF IP RIGHTS, AND THE INTELLECTUAL PROPERTY–ANTITRUST CONFLICT

The intellectual property system is described as an economic tradeoff: although patents and copyrights are meant to stimulate innovation by granting authors and inventors monopoly rights to their original works, the creation of monopolies can also create deadweight loss.[84] In fact, intellectual property rights encourage patent and copyright holders to engage in anticompetitive behaviors that would ordinarily violate antitrust laws.[85] This Part has two objectives. The first is to review the economics of intellectual property in order to explain why the remedies used to deter infringement generate both innovative and anticompetitive results. The second is to explain how granting a form of antitrust immunity to intellectual property holders may enhance IP's inefficiencies.

A. THE ECONOMICS OF INTELLECTUAL PROPERTY'S INNOVATIVE AND ANTICOMPETITIVE EFFECTS

From an economic perspective, intellectual property rights are meant to raise the costs of free riding[86] on another's creative efforts.[87] The process of

84. The harm to markets caused by IP's anticompetitive nature is generally described as a "static inefficiency." Mark Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1058 (2005) ("Intellectual property rights distort markets away from the competitive norm, and therefore create static inefficiencies in the form of deadweight losses."); s*ee also* Robin C. Feldman, *The Insufficiency of Antitrust Analysis for Patent Misuse*, 55 HASTINGS L.J. 399, 403 (2003) (discussing how patent rights incentivized holders to the types of anticompetitive arrangements that are forbidden by antitrust laws).

85. *See* R. Hewitt Pate, *Refusals to Deal and Intellectual Property Rights*, 10 GEO. MASON L. REV. 429, 432 (2002) (discussing how the right to exclude can become anticompetitive when a holder refuses to license their technology).

86. The free–rider problem is an economics concept referring to when an actor enjoys a good or service without bearing the cost for that good or service. This creates incentives to "free–ride" on the efforts of others, consuming at low or no cost. *See, e.g.*, Pamela Samuelson, *Functionality and Expression in Computer Programs: Refining the Tests for Software Copyright Infringement*, 31 BERKELEY TECH. L.J. 1215, 1262 (2016) (describing decisions by the Federal Circuit that attempt to avoid "unfair free–riding"); S. Zubin Gautam, *The Murky Waters of First Sale: Price Discrimination and Downstream Control in the Wake of* Kirtsaeng v. John Wiley & Sons, Inc., 29 BERKELEY TECH. L.J. 717, 736 (2014) (discussing the free–rider problem in context of international sales of copyrighted goods); Jingyuan Luo, *Shining the* Limelight *on Divided Infringement: Emerging Technologies and the Liability Loophole*, 30 BERKELEY TECH. L.J. 675, 699 (2015) (explaining how patents avoid free riding and allow "inventors to recoup their investment in research and development" of patented goods).

87. *See* Barclays Capital Inc. v. Theflyonthewall.com, Inc., 650 F.3d 876, 900–01 (2d Cir. 2011) (assessing the nature and extent of defendant's copyright infringement in the context of its attempts to free ride).

developing an original good tends to be costly, which authors and inventors incorporate into their goods' prices. [88] Without intellectual property rights, free riders could undersell an original good by copying and selling it at its marginal cost of production, avoiding the costs of the creative process.[89] The economic advantages of free riding as opposed to inventing would consequently stifle society's level of innovation.[90] Intellectual property's exclusionary nature mitigates this problem by granting authors and inventors the freedom to recoup their costs of innovation without the fear of being undersold.[91] In fact, holders can generally charge prices reflecting a limited monopoly so as to reward and incentivize parties to engage in creative activities. Under the current system, inventors gain the exclusive rights to produce patented goods for twenty years,[92] while the duration for copyrighted goods lasts seventy years plus the life of the author.[93]

The problem is that monopoly rights create the means and motives for holders to become anticompetitive. Consider how markets saturated with patents and copyrights are fundamentally different than competitive markets. In a competitive market, a producer who sells a good at an elevated price tends to lose sales to those offering identical (or substitute) items at cheaper prices, which drives prices down to more "competitive" levels.[94] But intellectual property rights shield holders from this pressure to charge competitive prices by eliminating the threat of rival producers who may undersell an overpriced good. This, in turn, gives patent and copyright holders strong motivation to gouge the market as much as possible. [95] Some

88. The marginal cost of production is the change in total cost that comes from making or producing an additional item. *See* Michael A. Carrier, *Resolving the Patent-Antitrust Paradox through Tripartite Innovation*, 56 VAND. L. REV. 1047, 1050 (2003) (discussing the economics of innovation and intellectual property).

89. *See id.*

90. *Id.* ("'[F]ree-riders' are tempted to imitate the invention after it has been developed, which would deter future inventors and investors and lead to a suboptimal level of innovation.").

91. *Id.*

92. 35 U.S.C. § 154(a)(2) (2012).

93. Pub. L. No. 105-298, § 102, 112 Stat. 2827 (codified at 17 U.S.C. § 302(a) (2000)).

94. *See* Eugene E. Agger, *Monopoly and Competitive Prices*, 3 AM. ECON. REV. 589, 591 (1913) ("Competitive price is the result of free competition and equals the costs of production.").

95. *See, e.g.*, RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 370–71 (8th ed. 2011) (describing this phenomenon in the context of cartels); Note, *Limiting the Anticompetitive Prerogative of Patent Owners: Predatory Standards in patent Licensing*, 92 YALE L.J. 831, 854–55 (1983) (explaining how exclusionary rights create the means and incentives for anticompetitive behavior).

commentators assert that an optimal level of intellectual property should thus allow producers to charge more than their good's cost of production but less than an excessive rate, a balance that they claim the intellectual property system has failed to achieve.[96]

In addition to monopoly pricing schemes, untethering patented and copyright goods from free market forces can incentivize holders to adopt a host of even greater anticompetitive behaviors, the most prominent of which is the tying arrangement.[97] In a tying arrangement, a holder requires those purchasing a patented or copyrighted good to buy a non–patented or copyrighted good or service.[98] In the patent context, because a patent canvasses only the technology described in the patent, tying arrangements expand one's monopoly rights to benefit non–patented items.[99] Not only does this artificially increase the non–protected good's demand, but it also insulates both items from competition.[100] For example, Kodak refused to supply independent mechanics with photocopier replacement parts, forcing consumers to use only Kodak repairmen, effectively tying the purchase of a Kodak photocopier with its maintenance.[101] And since most tying arrangements are only made possible with intellectual property rights—

96. BOHANNAN & HOVENKAMP, *supra* note 15, at xiv (noting in the context of the innovative/anticompetitive trade off: "[t]he patent system is in a crisis of overissuance, overprotection, and excessive litigation . . . . The future is bleaker for copyright law."); *see also* Freilich, *supra* note 24, at 151–52 (asserting the difficulty of establishing the correct "patent scope").

97. *See, e.g.*, Michael Wolfe, *The Apple E-Book Agreement and Ruinous Competition: Are E-Goods Different for Antitrust Purposes?* 12 DUKE L. & TECH. REV. 129, 136–37 (2014) (analyzing specifically copyrights: "where there exist federally granted intellectual property rights, the government has effectively given its imprimatur to a certain restraint of trade—the copyright monopoly—in furtherance of the goals of intellectual property.").

98. *Tying Arrangement*, BLACK'S LAW DICTIONARY 1660 (9th ed. 2009); *see also* Sandy Azer, *A Three-Tiered Public Policy Approach to Copyright Misuse in the Context of Tying Arrangements*, 82 FORDHAM L. REV. 81, 83 (2013) ("A tying arrangement involves conditioning the sale or licensing of one product on the consumer's agreement to purchase or license another.").

99. Fortner Enter., Inc. v. U.S. Steel Corp., 394 U.S. 495, 512–13 (1969) ("[T]he fundamental restraint against which the tying proscription is meant to guard is the use of power over one product to attain power over another, or otherwise to distort freedom of trade and competition in the second product . . . [T]he practice of tying forecloses other sellers of the tied product and makes it more difficult for new firms to enter that market.").

100. Formerly a tying arrangement was per se illegal when used in conjunction with a patent because intellectual property rights were believed to confer such market power on a holder that such arrangements were inherently anticompetitive. The Supreme Court amended this rule so plaintiffs must now prove the defendant possessed requisite market power. *See* Ill. Tool Works Inc. v. Indep. Ink, Inc. 547 U.S. 28, 41, 45–46 (2006).

101. Eastman Kodak Co. v. Image Tech. Serv., Inc., 504 U.S. 451, 478–79 (1992).

after all, absent monopoly rights, competitors could sell the patented good without its superfluous item—few competitive rationales justify tying arrangements and their attendant inefficiencies.[102]

A similar practice is the anticompetitive product design whereby a patented product is engineered to work best or exclusively with a non–patented good. The novelty of an anticompetitive product design involves how it explicitly avoids conditioning the sale of two goods upon each other like a tying arrangement.[103] Anticompetitive designs may artificially increase demand for a secondary product insofar as such a product benefits from the protected good's patent.[104] If a patented good constitutes foundational technology, an anticompetitive design can bar rival producers from competing in the greater industry.[105] Apple, for instance, initially designed the iPod to play digital music from almost any source,[106] but then closed the system, limiting the iPod's compatibility to music purchased from Apple's iTunes store.[107] This development impeded rivals from competing against Apple in both the markets for digital music and devices to play digital music.[108] After all, if a consumer purchased an iPod, the

102. In terms of procompetitive justifications, a tying arrangement could actually benefit consumers if consumer demand exists for a convenient manner in which to purchase two items. Jefferson Parish Hosp. Dist. No. 2 v. Hyde, 466 U.S. 2, 11–12 (1984) ("It is clear, however, that not every refusal to sell two products separately can be said to restrain competition. If each of the products may be purchased separately in a competitive market, one seller's decision to sell the two in a single package imposes no unreasonable restraint on either market, particularly if competing suppliers are free to sell either the entire package or its several parts."); *see also* Mark DeFeo, *Unlocking the iPhone: How Antitrust Law Can Save Consumers from the Inadequacies of Copyright Law*, 49 B.C. L. REV. 1037, 1057–58 (2008) (describing the harmful economics of tying arrangements).

103. *See* United States v. Microsoft Corp., 253 F.3d 34, 75 (D.D.C. 2001) (stating that a product design can violate the antitrust laws by being anticompetitive if there are no procompetitive benefits of making it incompatible with competitors' products).

104. John M. Newman, *Anticompetitive Product Design in the New Economy*, 39 FLA. ST. U. L. REV. 681, 683 (2012) ("The archetypical design-conduct challenge alleges that a firm, dominant in one product market, designed a new version of that product so as to maximize interoperability with its own complementary product(s), essentially requiring customers to buy the two together.").

105. *Id.* ("[T]he theory goes, the defendant either engaged in 'foreclosure' (excluding rivals who make interoperable complementary goods from the market), 'leveraging' . . . or both. Such conduct is often referred to as 'technological tying' because of its conceptual similarity to contractual tying. And as with contractual tying, a healthy debate surrounds the viability of claims that it is anticompetitive.").

106. *Id.* at 697–98.

107. *See* Class Action Complaint at 4, Slattery v. Apple Comput., Inc., No. C05-00037 PVT, 2005 WL 3689273 (N.D. Cal. Jan 3, 2005).

108. *Id.* at 17.

transaction would necessarily compel the consumer to buy music from Apple's iTunes store as opposed to other sellers.

Another anticompetitive use of intellectual property rights occurs when a holder refuses to license a patented or copyrighted good to third parties.[109] A fundamental principle of property rights is that a property owner may exclude others from using or possessing her property.[110] But in the intellectual property context, refusing to share copyrighted or patented art may hinder both innovation and competition because innovators commonly rely upon older works to create new technology. If prior generations' patent owners refuse to license their work, they can frustrate inventors from innovating new products[111] as well as from entering the market.[112] In light of a copyright's multigenerational duration and a patent's twenty–year span, the refusal to license intellectual property rights can frustrate innovation for significant periods of time.

Moreover, even the affirmative act of licensing a patented or copyrighted good may give rise to anticompetitive effects. For example, some goods are comprised of multiple patents owned by disparate parties; a patent pool is an agreement among a common good's patent holders to set a lump sum price for licenses to their collective patents.[113] Ideally a patent pool can reduce the transaction costs borne by parties who would otherwise

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109. *See generally* Shyamkrishna Balganesh, *Demystifying the Right to Exclude: Of Property, Inviolability, and Automatic Injunctions*, 31 HARV. J.L. & PUB. POL'Y 593, 595 (2008) (offering a nuanced discussion of the right to exclude in relationship to intellectual property rights).

110. *See* Crane, *supra* note 37, at 253 n.1 (noting authority that the "right to exclude" may be "the essential stick in the bundle of rights known as property").

111. *See, e.g.*, Intergraph Corp. v. Intel Corp., 3 F. Supp. 2d 1255, 1266–67 (N.D. Ala. 1998); Dana R. Wagner, *The Keepers of the Gates: Intellectual Property, Antitrust, and the Regulatory Implications of Systems Technology*, 51 HASTINGS L.J. 1073, 1082 (2000) (discussing Intergraph and remarking that Intel's decision to quit licensing its technology prevented competitors from building off of Intel's technology, which dominated the industry).

112. *See generally* Sheri J. Engelken, *Opening the Door to Efficient Infringement:* eBay, Inc. v. MercExchange, L.L.C., 2 AKRON INTELL. PROP. J. 57, 61 (2008) (providing an overview of the problem created when a patent holder "suppresses" their patent); Seungwoo Son, *Selective Refusals to Sell Patented Goods: The Relationship Between Patent Rights and Antitrust Law*, 2002 U. ILL. J.L. TECH. & POL'Y 109, 110 (2002) ("A significant conflict between these two bodies of law has recently arisen in cases where an IP holder selectively refuses to sell or license a patent or copyright, thereby harming the competitive process . . . . ").

113. Phillip B. Nelson, *Patent Pools: An Economic Assessment of Current Law and Policy*, 38 RUTGERS L.J. 539, 539 (2007) ("Patent pools are agreements among patent owners through which patent owners combine their patents, waiving their exclusive rights to the patent so that they or others can obtain rights to license the pooled patents.").

need to negotiate individual licenses with numerous holders.[114] A problem occurs when the patentees collude, refusing to license their patents to those seeking to compete against the group or develop new technologies.[115] Or on occasion a patent pool imposes a licensing requirement whereby each licensee must agree to charge and maintain a certain above–market price on the patented good.[116] So by prohibiting or increasing the costs of introducing a new technology, a patent pool can insulate its members from competition and decrease society's rate of innovation.[117] However, these anticompetitive arrangements appear to facially violate competition laws.

B. ANTITRUST AND INTELLECTUAL PROPERTY'S ANTICOMPETITIVE EFFECT

Antitrust laws promote competitive markets by forbidding many of the exclusionary behaviors that intellectual property rights incentivize.[118] In order to harmonize these bodies of law, intellectual property rights create a limited antitrust exception.[119] This framework allows holders to seek monopoly prices and arrangements so long as their conduct remains within

114. *See, e.g.*, Hillary Greene, *Patent Pooling Behind the Veil of Uncertainty: Antitrust, Competition Policy, and the Vaccine Industry*, 90 B.U. L. REV. 1397, 1398, 1400 (2010) (illustrating the patent problem using the need to develop vaccines for emerging diseases: "[m]ultiple, potentially blocking patents, could, therefore, encumber the genomic sequence that researchers need to develop a vaccine.").

115. Saami Zain, *Misuse of Misuse:* Princo Corp. v. International Trade Commission *and the Federal Circuit's Misguided Patent Misuse Jurisprudence*, 13 N.C. J.L. & TECH. 95, 101, 104–05 (2011) (discussing *Zenith Radio Corp. v. Hazeltine* and noting that "*Zenith Radio* involved various interrelated misuse and antitrust allegations involving patent pools and conspiracies to deter entry in various markets. . . . Zenith contended that Hazeltine committed both misuse and antitrust violations by, inter alia, conspiring with foreign manufacturers to create patent pools and refusing to license pooled patents in certain markets for the purpose of restraining competition." (citing 395 U.S. 100, 104–05 (1969))).

116. United States v. Line Material Co., 333 U.S. 287, 308, 310–11 (1948).

117. *See* Phillip W. Goter, Princo*, Patent Pools, and the Risk of Foreclosure: A Framework for Assessing Misuse*, 96 IOWA L. REV. 699, 712–13 (2011) (discussing whether patent pools could stifle innovation).

118. Michael A. Carrier, *Unraveling the Patent-Antitrust Paradox*, 150 U. PA. L. REV. 761, 784 (2002) (reviewing the "patent-antitrust conflict").

119. *See* Joseph Scott Miller, *Patent Ships Sail an Antitrust Sea*, 30 SEATTLE U. L. REV. 395, 397–98 (2007) ("Free competition, which antitrust law helps ensure, is the fundamental norm. . . . Patent Protection, if one can obtain it at all, is a hard-earned, partial exception."); *see also* Spencer Weber Waller & Matthew Sag, *Promoting Innovation*, 100 IOWA L. REV. 2223, 2235 (2015) (quoting Herbert Hovenkamp and finding that "the patent-antitrust conflict may be 'readily exaggerated.' Hovenkamp suggests that there are, in fact, only 'a small number of cases in which both a plausible antitrust claim and a countervailing IP policy are present.'") (internal citation omitted).

the scope of a patent or copyright.[120] The following Section reviews IP's antitrust immunity and why observers assert it has made markets even less competitive.[121]

There are two sections of the Sherman Act—Sections 1 and 2—relevant to anticompetitive harms derived from intellectual property rights. Section 1 bars agreements and contracts that *unreasonably* restrain trade.[122] Singular parties acting without a coconspirator cannot violate Section 1 since an "agreement" necessitates multiple actors.[123] The predominant way courts scrutinize whether an act involving intellectual property violates antitrust law is using the rule of reason test.[124] The rule of reason test requires a court to determine whether an arrangement's anticompetitive effects outweigh its market benefits.[125] In doing so, a court asks three questions: "(1) does the agreement have anticompetitive effects; (2) if so, are there procompetitive justifications for the agreement; and (3) can the plaintiffs present evidence that the challenged conduct is unnecessary to achieve those justifications."[126] When a challenged activity arises out of IP rights, courts tend to scrutinize whether the patent or copyright statute permitted the act.[127] If such a behavior exceeded the scope of one's patent or copyright, this militates towards a violation.[128] After all, "a patent gives

120. Elizabeth I. Winston, *A Patent Misperception*, 16 LEWIS & CLARK L. REV. 289, 290 (2012) ("Patent holders have long perceived actions arising under the Patent Act to be immune from the Sherman Act . . . . The limited restraints on trade bestowed on patentees as a reward for public disclosure are not unlawful restraints that destroy competition, but rather incentives for competitors to innovate.").

121. *Id.* at 293–95 (discussing the patent/IP tradeoff whereby patents serve as a "limited right to restrict trade").

122. 15 U.S.C. § 1 (2012); Reg'l Multiple Listing Serv. of Minn., Inc. v. Am. Home Realty Network, Inc., 960 F. Supp. 2d 958, 979 (D. Minn. 2013) ("To establish a claim under Section 1 of the Sherman Act a plaintiff must demonstrate (1) that there was a contract, combination, or conspiracy; (2) that the agreement unreasonably restrained trade under either a per se rule of illegality or a rule of reason analysis . . . .").

123. *See, e.g.*, Arista Records LLC v. Lime Group, 532 F. Supp. 2d 556, 579 (S.D.N.Y 2007) (dismissing an antitrust claim because the plaintiffs failed to demonstrate a "meeting of the minds" between alleged Section 1 conspirators).

124. *See Reg'l Multiple Listing*, 960 F. Supp. 2d at 984.

125. Bhan v. NME Hosp., Inc., 929 F.2d 1404, 1410 (9th Cir. 1991) ("Under [the rule of reason] test, we must analyze the degree of harm to competition along with ay justifications or pro-competitive effects to determine whether the practice is unreasonable on balance.").

126. *In re* Wellbutrin XL Antitrust Litig., 133 F. Supp. 3d 734, 753 (E.D. Pa. 2015).

127. *See* King Drug Co. of Florence, Inc. v. Smithkline Beecham Corp., 791 F.3d 388, 406–07 (3d Cir. 2015) (explaining that challenged conduct sought to expand the patentee's intellectual property rights) (citing FTC v. Actavis, 133 S. Ct. 2223 (2013)).

128. FTC v. Actavis, 133 S. Ct. 2223, 2231 (2013) (explaining that this inquiry typically scrutinizes "traditional antitrust factors such as likely anticompetitive effects,

its holder a 'bundle of rights,' but any new exclusionary rights the holder buys to add to that bundle do not fall within the scope of the patent grant and [thus] do not fall within the scope of the patent's antitrust immunity."[129] Most anticompetitive uses of intellectual property rights, though, survive the rule of reason test.

Take *John Wiley & Sons, Inc. v. Schumacher* for instance.[130] Book publishers often produce multiple versions of a textbook: a more expensive U.S. version and a cheaper copy for international markets.[131] At issue was book publisher John Wiley's practice of barring third parties from importing its international textbooks into the United States,[132] which was John Wiley's statutory right under the U.S. Copyright Act.[133] Since restricting the importation of cheaper textbooks was said to offer neither a procompetitive justification nor consumer benefits, it was alleged that John Wiley had violated Section 1.[134] The court, unconvinced, dismissed the case, remarking that although John Wiley had likely harmed competition, it had done so in a manner allowed by the Copyright Act. In other words, because John Wiley had copyrights on the challenged textbooks, it had operated within the scope of its antitrust immunity.[135]

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redeeming virtues, market power, and potentially offsetting legal considerations present in the circumstances, such as . . . those related to patents").

129. F.T.C. v. Watson Pharm., Inc., 677 F.3d 1298, 1308–09 (11th Cir. 2012) (internal citation omitted).

130. John Wiley & Sons, Inc. v. Shumacher, No. 09 Civ. 2108(CM), 2010 WL 103886, at *1 (S.D.N.Y. Jan. 4, 2010).

131. *See* Melissa Goldberg, *A Textbook Dilemma: Shoulder the First Sale Doctrine Provide a Valid Defense for Foreign-Made Goods?*, 80 FORDHAM L. REV. 3057, 3078 (2012).

132. *Schumacher*, 2010 WL 103886, at *6 ("Essentially defendant argues that Plaintiffs violate the Sherman Act (Section 1) by restricting the resale of international versions of their textbooks in the United States.").

133. The extent of John Wiley's right to control importation of its international textbooks was texted in *Kirtsaeng v. John Wiley & Sons, Inc.*, 133 S. Ct. 1351 (2013). In this case, John Wiley argued that importing copyrighted international textbooks into the United States without its permission violated the textbooks' copyrights because the first sale doctrine does not apply to international produced goods. *Id.* at 1357. The Court disagreed, ruling that so long as an internationally made good has been sold once, third parties may freely import the copyrighted good into the United States. *Id.* at 1355–56.

134. *See Schumacher*, 2010 WL 103886, at *6.

135. *Id.* ("The problem with defendant's argument is that the United States copyright laws grant Plaintiffs the exclusive right 'to distribute copies . . . or the copyright work to the public by sale or other transfer of ownership.' Thus, the copyright laws empower Plaintiffs engage in the activity about which defendant complains.") (citing 17 U.S.C. § 106 (2012)).

The other avenue to assert a Sherman Act claim against a rights holder is Section 2, which prohibits "monopoliz[ing] or attempt[ing] to monopolize . . . any part of the trade or commerce."[136] In order to establish a Section 2 monopoly claim,[137] a plaintiff must demonstrate that a party possessing sufficient market power used "exclusionary conduct"[138] to create the "very real" possibility of a monopoly.[139] However, monopolies arising from intellectual property rights are not considered "unreasonably exclusionary," but instead constitute a legitimate exercise of one's property right.[140] So long as a holder does not engage in illegal tying,[141] sham litigation,[142] or fraudulent procurement of intellectual property rights, holders are generally free to charge "higher-than-competitive prices" for protected goods.[143]

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136. 15 U.S.C. § 2 (2012); Matsushita Elec. Indus. Co. v. Cinram Int'l, Inc., 299 F. Supp. 2d 370, 376 (D. Del. 2004) (providing a recitation of Section 2).

137. Comcast Corp. v. Behrend, 133 S. Ct. 1426, 1438 (2013) ("[A]ntitrust injuries must be 'of the type the antitrust laws were intended to prevent and that flo[w] from that which makes defendants' acts unlawful.'") (citing Atl. Richfield Co. v. USA Petrol. Co., 495 U.S. 328, 334 (1990)).

138. Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 306 (3d Cir. 2007) ("Anticompetitive conduct may take a variety of forms, but it is generally defined as conduct to obtain or maintain monopoly power as a result of competition on some basis other than the merits."); Lenox Maclaren Surgical Corp. v. Midtronic Inc., No. 10-cv-02139-MSK-BNB, 2015 WL 7774187, at *5 (D. Colo. Dec. 3, 2015) ("To establish a claim for monopolization under Section 2 of the Sherman Act, Lenox must show a specific Defendant . . . willfully acquired or maintained this power through exclusionary conduct . . . . "); Brian F. Ladenburg, *Unilateral Refusals to Deal in Intellectual Property After* Image Technical Services, Inc. v. Eastman Kodak Co., 73 WASH. L. REV. 1079, 1083 (1998).

139. United States v. Grinnell Corp., 384 U.S. 563, 571 (1966); *see also* Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585, 595 (1985) (noting that the "possession of monopoly power in a relevant market" is a necessary condition of a Section 2 violation).

140. Winston, *supra* note 120, at 290 ("Patent holders have long perceived actions arising under the Patent Act to be immune from the Sherman Act . . . .").

141. An illegal tying arrangement differs from a legal tying arrangement. The primary difference concerns the amount of market powered wielded by the patentee. Ill. Tool Works Inc. v. Indep. Ink, Inc., 547 U.S. 28, 45–46 (2006); *see generally* Christopher R. Leslie, *Unilaterally Imposed Tying Arrangements and Antitrust's Concerted Action Requirement*, 60 OHIO ST. L.J. 1773 (1999).

142. *See generally* David R. Steinman & Danielle Fitzpatrick, *Antitrust Counterclaims in Patent Infringement Cases: A Guide to* Walker *Process and Sham-Litigation Claims*, 10 TEX. INTELL. PROP. L.J. 95 (2001).

143. *In re* Indep. Serv. Orgs. Antitrust Litig., 203 F.3d 1322, 1327–28 (Fed. Cir. 2000) ("In the absence of any indication of illegal tying, fraud in the Patent and Trademark Office, or sham litigation, the patent holder may enforce the statutory right to exclude others from making, using, or selling the claimed invention free from liability under the antitrust laws. We therefore will not inquire into his subjective motivation for exerting his statutory rights, even though his refusal to sell or license his patented invention may have an

For example, in *Schor v. Abbott Laboratories*,[144] Abbott allegedly used an impermissible monopoly leveraging scheme to sell its patented drug Norvir.[145] Drugs are commonly administered as cocktails in which one drug's efficacy is enhanced when combined with another drug. The plaintiffs in *Schor* claimed Abbot was selling Norvir too cheaply while charging too much for the cocktail containing Norvir.[146] Supposedly Norvir's low price was intended to drive competitors out of the market, allowing Abbott to then raise Norvir's price to an anticompetitive level.[147] The Seventh Circuit's Judge Easterbrook disagreed with the plaintiffs' theory, ruling that exploiting drug prices falls squarely within Abbott's patent rights: "[t]he price of Norvir cannot violate the Sherman Act: a patent holder is entitled to charge whatever the traffic will bear."[148] Thus without an exclusionary act rising above monopoly pricing, the market inefficiencies created by Abbott's scheme are the expected consequences of its patent rights.[149]

Likewise in *In re Adderall XR Antitrust Litigation*,[150] pharmaceutical giant Shire sought to avoid litigating the validity of its Adderall patent by licensing the drug to competing generic makers.[151] The problem was Shire—in endeavoring to maintain its Adderall monopoly—allegedly violated Section 2 by undersupplying the generic companies' orders and also charging "supra-competitive" prices.[152] The court ruled that Shire, as a patent holder, had no antitrust duty to deal with competitors even if market

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anticompetitive effect, so long as that anticompetitive effect is not illegally extended beyond the statutory patent grant."); Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176, 221 (1980) ("[T]he boundary of a patent monopoly is to be limited by the literal scope of the patent claims.").

144. 457 F.3d 608 (7th Cir. 2006).

145. *Id.* at 610.

146. *Id.* at 610–11.

147. *Id.* at 610 ("Schor calls the strategy 'monopoly leveraging': Abbott is trying to use its patent to obtain a monopoly of all protease inhibitors by inducing HIV patients to buy Kaletra, which will lead other vendors to drop out of the market. Once rivals' products have been vanquished, Abbott will be able to jack up the price of Kaletra as well as Norvir.").

148. *Id.*

149. *See id.* at 611–12. The court also had misgivings about the economics of the plaintiff's allegations. *Id.* Judge Easterbrook recited a number of legitimate, procompetitive rationales explaining why the market might be improved by Abbott's strategy. *Id.*

150. 754 F.3d 128 (2d Cir. 2014).

151. *See id.* at 131.

152. *Id.* ("Shire relegated them to 50-60% of the market, instead of the 90% share they might have been expected to capture. . . . This, in turn, allowed Shire to fix, raise, maintain, and/or stabilize the price of AXR Product at supra-competitive levels.").

harms resulted.[153] In fact, Shire's willingness to partially fill its rivals' orders likely increased competition as Shire could have completely foreclosed competitors from the market.[154]

While antitrust traditionally permits holders to burden markets when acting within their intellectual property rights,[155] there is no bright line rule.[156] The Supreme Court recently said as much in *F.T.C. v. Actavis, Inc.*[157] in which the Court held acting within one's intellectual property rights is a substantial factor tipping against antitrust liability.[158] A dissenting Chief Justice Roberts was incredulous, noting the Court has always adhered to the principle that a patent "provides an exception to antitrust law, and the scope of the patent—i.e., the rights conferred by the patent—forms the zone within which the patent holder may operate without facing antitrust liability."[159] Nonetheless, the *Actavis* majority held a reverse payment settlement,[160] even when falling within a patent holder's intellectual property grant, may lead to an antitrust violation if the holder cannot justify the agreement with some competitive rationale.[161] In short, the manner in

153. *Id.* at 135 ("The mere existence of a contractual duty to supply goods does not by itself give rise to an antitrust 'duty to deal.'").

154. *Id.* (stating that Shire did the opposite of eliminate competition by licensing the drug to competitors).

155. *See* FTC v. Actavis 133 S. Ct. 2223, 2231 (2013) ("To strike that balance, the Court asked questions such as whether 'the patent statute specifically gives a right' to restrain competition in the manner challenged . . . .").

156. *See generally* Jennifer D. Cieluch, *The FTC Has a Dog in the Patent Monopoly Fight: Will Antitrust Bite Kill Generic Challenges?*, 13 DUKE L. & TECH. REV. 267 (2015) (discussing the Supreme Court's reconfiguration of the Federal Circuit's old rule providing antitrust immunity for almost all acts falling within an intellectual property holder's rights).

157. *Actavis*, 133 S. Ct. at 2223.

158. *Id.* at 2231 ("[C]ontrary to the Circuit's view that the only pertinent question is whether 'the settlement agreement . . . fall[s] within' the legitimate 'scope' of the patent's 'exclusionary potential,' this Court has indicated that patent and antitrust policies are both relevant in determining the 'scope of the patent monopoly'—and consequently antitrust law immunity—that is conferred by a patent.") (internal citation omitted).

159. *Id.* at 2238 (Roberts, C.J., dissenting).

160. F.T.C. v. Watson Pharm., Inc., 677 F.3d 1298, 1301 (11th Cir. 2012) ("In this type of settlement, a patent holder pays the allegedly infringing generic drug company to delay entering the market until a specified date, thereby protecting the patent monopoly against a judgment that the payment is invalid or would not be infringed by the generic competitor.").

161. *Actavis*, 133 S. Ct. at 2237 ("In sum, a reverse payment, where large and unjustified, can bring with it the risk of significant anticompetitive effects; one who makes such a payment may be unable to explain and to justify it; such a firm or individual may well possess market power derived from the patent; a court, by examining the size of the payment, may well be able to assess its likely anticompetitive effects along with its potential justifications without litigating the validity of the patent.").

which intellectual property rights have been excluded from the scope of antitrust law may encourage holders to overly exploit their patent or copyright's exclusionary nature to the detriment of markets and competition.

IV. THE LOGIC AND VALUE OF PIRACY

Although holders enjoy the freedom to pursue anticompetitive arrangements, the U.S. market appears to function effectively.[162] The intellectual property system supports high levels of innovation without high levels of deadweight loss.[163] The United States is ranked consistently as a global leader in research and development spending, innovation, and economic growth.[164] Although intellectual property rights *should* incentivize anticompetitive behavior, holders seem to avoid the upper bounds of monopolistic conduct, promoting the public's good and rejecting their own self–interest. At first glance, the holders' conduct makes little sense.

This Part credits piracy with increasing competition, innovation, and efficiency in markets with high levels of intellectual property. The process is explained in two steps. First, the act of infringement tends to be profitable only when a patented or copyrighted good is sold at an exceptionally overpriced or anticompetitive manner rather than competitively. Second, the best strategy for a holder to fight infringement is to reduce the good's price or eliminate anticompetitive practices.

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162. *See* Luisa R. Blanco et al., *The Impact of Research and Development on Economic Growth and Productivity in the U.S. States*, 82 S. ECON. J. 915 (2016) (noting that the United States is ranked in the top ten countries for research and development which is a leading determinant of sustainable economic growth); *see also* John Wu, *Fueling Innovation: The Role of R&D in Economic Growth*, INNOVATION FILES (Dec. 17, 2015), http://www.innovationfiles.org/fueling-innovation-the-role-of-rd-in-economic-growth/ (demonstrating that the United States is a global leader in research and development which has a substantial impact on economic growth).

163. Deadweight loss refers to a situation in which a market in equilibrium is less efficient than its expected production. Press Release, World Intellectual Prop. Org., Global Innovation Index 2014: Switzerland, UK and Sweden Lead Rankings with Encouraging Signs from Sub-Saharan Africa (July 18, 2014), http://www.wipo.int/pressroom/en/articles/2014/article_0010.html (ranking the United States as sixth in its list of the world's most innovative countries).

164. *Id.*; *see* Karsten Strauss, *The World's Most Competitive Countries 2016: U.S. No Longer No. 1*, FORBES (May 30, 2016, 11:00 AM), http://www.forbes.com/sites/karstenstrauss/2016/05/30/the-worlds-most-competitive-countries-2016-u-s-no-longer-no-1/ (reviewing a study finding that the United States currently has the third most competitive economy after being the most competitive economy over the past three years).

A. THE ECONOMICS OF INFRINGEMENT

From an economic perspective, the act of piracy is a rational response to situations when a patented or copyrighted good is sold at a substantially above–market price. Consider the corollary about why it makes little sense to infringe upon the rights of a competitively priced item. Competitive markets offer only small profits because the nature of competition among sellers drives prices down to a good's marginal cost of production.[165] Infringers cannot rationally[166] compete in a competitive market because they must incorporate the costs of infringement (i.e., monetary damages, equitable remedies, and/or criminal penalties) into a pirated good's price, which patent and copyright owners avoid.[167] In other words, a legitimate producer can sell a good at around its production costs, whereas infringing goods must be sold at higher prices entailing production costs *plus* civil and/or criminal penalties. Because the cost of infringement tends to be greater than the modest profits available in competitive markets, it is typically unprofitable and thus irrational for one to pirate a competitively priced good.

It is similarly irrational for consumers to purchase an infringing good sold at the same or similar price as the licit item. Indeed, buyers incur additional costs and gain fewer benefits when purchasing an infringing

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165. *See Competition*, BLACK'S LAW DICTIONARY 278–79 (7th ed. 1999) ("A completely efficient market situation characterized by numerous buyers and sellers . . . ."); *see also* Jeffrey M. Rosenfeld, *Spiders and Crawlers and Bots, Oh My: The Economic Efficiency and Public Policy of Online Contracts that Restrict Data Collection*, 2002 STAN. TECH. L. REV. 3, 17 (2002) ("[I]n a market system of homogeneous products and inconsequential search costs, the conventional Bertrand economics model predicts that price competition among vendors will reduce prices to the marginal cost of production . . . ."); *id.* (noting that profits tend to be minimal, or absent, in perfect markets).

166. Economic theory posits that actors—including pirates—are rational, meaning that they engage in activities with the greatest net utility (defined as the most benefits minus the costs). *See* George M. Cohen, *Posnerian Jurisprudence and Economic Analysis of Law: The View from the Bench*, 133 U. PA. L. REV. 1117, 1158 n.228 (1985) (discussing rationality as an economic behavior as applied to intellectual property infringement); *cf.* Apik Minassian, *The Death of Copyright: Enforceability of Shrinkwrap Licensing Agreements*, 45 UCLA L. REV. 569, 596–97 (1997) (discussing emerging black markets as rational economic decisions based upon legal incentive structures).

167. 17 U.S.C. § 506(a)(2) (2012) (criminalizing willful copyright infringement); 17 U.S.C. § 504(a) (2012) (establishing civil penalties for copyright infringement); 35 U.S.C. § 284 (2012) (setting civil penalties for patent infringement claims); *see also* Erin Ann O'Hara, *Brain Plasticity and Spanish Moss in Biolegal Analysis*, 53 FLA. L. REV. 905, 928 (2001) (remarking that those who engage in black market activities are often exercising advanced cost/benefit analysis where the costs are derived from the penalties associated with illegal behavior).

work.[168] With respect to the advantages of purchasing a legitimate product, consumers often receive express and implied warranties guaranteeing quality and performance.[169] A commonly available warranty is the implied warranty of merchantability, which allows buyers to recoup the value of a poorly performing good.[170] There are also contract and tort–based causes of action, which can be exercised individually or as part of a class that allow consumers to sue producers who sell dangerous, deceptive, or ineffective goods.[171] Most of these causes of action are unavailable, either practically or legally, when purchasing a pirated item.[172] Furthermore, buyers of infringing goods may have to navigate the black market, which poses unique risks attendant to criminal networks.[173] In turn, since legitimate goods offer consumers superior benefits, while illicit products come with greater disadvantages, consumers tend to favor purchasing legitimate goods over their black market counterparts even when both products are sold at similar prices. A pirated good must therefore be significantly cheaper than its legitimate counterpart before a consumer is likely to purchase it.

But when a holder charges supracompetitive prices for a patented or copyrighted good—i.e., a price that is substantially above its marginal cost of production—the resulting pricing discrepancy can attract and incentivize piracy. Infringement becomes rational when a holder prices her good at a level so far above its marginal cost of production that a pirate can reproduce

168. *See* Daniel Bukszpan, *Counterfeiting: Many Risks, Many Victims*, CNBC (July 13, 2000, 5:00 PM), http://www.cnbc.com/id/38229835 (discussing the hidden harms consumers face when purchasing infringing items).

169. *See, e.g.*, U.C.C. § 2-314 (AM. LAW INST. & UNIF. LAW COMM'N 1977) (explaining that the warranty of merchantability is an implied warranty created without express words in transactions where at least one party is considered a merchant, giving purchasers a warranty in the sale of goods that the good purchased shall perform at a reasonably high quality); U.C.C. § 2-714 (AM. LAW INST. & UNIF. LAW COMM'N 1977) (providing buyers with contractual remedies when a seller breaches contract for sale of goods).

170. Balog v. Center Art Gallery-Haw., Inc. 745 F. Supp. 1556, 1563 n.16 (D. Haw. 1990) (discussing the implied warranty of merchantability's lack of application to pirated goods).

171. *See generally* M. Stuart Madden, *The Duty to Warn in Products Liability: Contours and Criticism*, 89 W. VA. L. REV. 221, 222 (1987) (discussing consumer rights when purchasing a dangerous good).

172. *See, e.g.*, Porter v. Wertz, 53 N.Y.2d 696 (N.Y. 1981) (finding that a buyer bore the risk for purchasing a stolen good because he bought the item in an illicit manner from a vendor who could not be considered to be a merchant).

173. *See, e.g.*, Steven Davenport et al., *Controlling Underage Access to Legal Cannabis*, 65 CASE W. RES. L. REV. 541, 544 (2015) ("Black markets generate substantial harms above and beyond mere provision of the substance. Those harms include crime, violence, and corruption [and] a potentially more dangerous product . . . .").

it, incorporate civil and criminal penalties in its costs, and still generate a profit. For example, if a patented drug costs $1 per pill to produce, civil infringement damages are $5,000 per pill, and the drug is sold for $10,001, a black marketer can rationally profit from its infringement by selling the drug for more than $5000 per pill but less than $10,000. This is because if the pirate sells the drug for more than $10,000 per pill, consumers will likely buy the licit drug instead, and the pirate cannot sell for less than $5000 since the cost of infringement will cannibalize any profits. The corollary is that the patent holder should be able to charge up to $5,000 for the $1 pill without incentivizing black market copies. So as a protected good's price climbs farther away from a competitive level, a pirated version becomes more likely.

Other anticompetitive behaviors are just as likely to attract black market entrants. For example, when a tying arrangement raises the price of a patented or copyrighted good, black marketers can profitably supply the protected item without the tied good, infringing upon the holder's intellectual property rights, even after paying production and infringement costs. As previously mentioned, record companies in the music industry were able to compete against pirated digital music by untying the albums, selling their tracks individually.[174] Explaining the situations in which infringement becomes likely is only the first step; the next Section explains infringement's pro–market effects.

B. THE EFFICIENT EFFECTS OF BLACK MARKETS

Piracy enhances competition and efficiency in situations where a holder adopts her best possible anti–piracy strategy, which is to directly compete against the infringing good. When a holder's market becomes saturated with unauthorized copies, a holder's first instinct may be to pursue legal remedies, but even if the law can reduce degrees of infringement, most black marketers have incorporated the costs of civil and criminal penalties into their business models. [175] So even when a holder can extract damages from an infringer, the conduct is likely to continue. Another problem with legal remedies stems from the difficulty of sanctioning even the most brazen

174. Steve Knopper, *iTunes' 10th Anniversary: How Steve Jobs Turned the Industry Upside Down*, ROLLING STONE (Apr. 26, 2013), http://www.rollingstone.com/music/news/itunes-10th-anniversary-how-steve-jobs-turned-the-industry-upside-down-20130426 ("Apple's iTunes Music Store, which opened ten years ago this Sunday, exists for one major reason: Napster.").

175. David M. Hornik, *Combating Software Piracy: The Softlifting Problem*, HARV. J.L. & TECH. 377, 390 (1994) (discussing the manner in which holders can demonstrate that sales of pirated goods have diminished their sales); *see* O'Hara, *supra* note 167, at 928.

acts of infringement. Not only do most piracy networks operate clandestinely, a significant portion of piracy occurs internationally where, in light of intellectual property law's presumption against extraterritoriality, U.S. IP laws have little efficacy.[176] Combined with the lack of capacity of certain jurisdictions to remedy patent and copyright infringement, enforcing one's intellectual property rights can be nearly impossible.[177] So despite the worthiness of a holder's claim, legal redress can be ineffective when the economics of piracy is rational and the location of infringement is out of reach.[178]

Left with little recourse, most holders choose to compete directly against piracy in the open market.,[179] By eliminating a tying arrangement or lowering a good's price to approximate the infringing good's cost, a holder may persuade consumers to purchase the legitimate item instead of the pirated version. It is not necessary to charge a true market price—which would effectively relinquish one's monopoly rights—but instead the good's price must only be competitive enough to diminish the black market's economic logic. After all, as long as a holder asks only for a reasonably above market premium, pirates are likely to determine that the costs of infringement are too expensive while consumers find the risks dissatisfactory. Using the prior pharmaceutical hypothetical, one must only reduce their patented drug's cost down towards $5,000 at which point piracy stops being profitable while still generating enough profit for the patentee to incentivize innovation. Even in situations when the good has a high cost of production, a substantial margin between the cost of production and sales price can incentivize infringement. Thus, because it is a holder's most effective strategy to be more competitive when faced with piracy, infringement can increase aggregate market efficiency, resulting in cheaper and more competitively sold goods.

In fact, the true prophylactic effect of pirated goods tends to go unnoticed because *the threat* of infringement encourages patent and

176. *See* Hornik, *supra* note 175.

177. *See* Christopher Buccafusco & Jonathan Masur, *Innovation and Incarceration: An Economic Analysis of Criminal Intellectual Property Law*, 87 S. CAL. L. REV. 275, 329 (2014) ("Of course, there is always the possibility that an infringer will be a foreign firm whose assets cannot be seized by American courts. To the extent that black markets for patented products have developed, they have typically been foreign based, for precisely this reason.").

178. *See generally* Peter K. Yu, *P2P and the Future of Private Copying*, 76 U. COLO. L. REV. 653, 702 (2005) (implying that illegal music downloading is likely to continue despite the availability of legal remedies).

179. *See infra* Part IV (providing examples of patent and copyright holders becoming more competitive in response to the black market for their goods).

copyright holders to embrace more competitive behaviors.[180] Similar to how penal codes are primarily intended to dissuade individuals from initially choosing antisocial behaviors rather than punishing lawbreakers, piracy's threat dissuades holders from adopting anticompetitive business strategies from the beginning.[181] For instance, Netflix CEO David Wells stated that Netflix's prices subscriptions are based upon a region's level of piracy: the more piracy a region has, the cheaper the service is.[182] Another example is Microsoft, which sells software at lower prices in countries suffering from higher levels of piracy in order to attract commerce away from the black market.[183] Firms are thus fully aware of the threat posed by infringement and the manner in which pirates target anticompetitive industries. Instead of reacting after infringement arises, companies like Netflix and Microsoft attempt to deter piracy by offering more competitively priced products from their launch.

Furthermore, piracy helps intellectual property achieve its intended purpose. Recall that an ideal level of intellectual property should permit innovators to recoup their costs of innovation but not to overly tax markets.[184] In other words, intellectual property is meant to benefit innovation, not innovators. Because it is generally unprofitable to infringe upon the rights of a competitively priced good,[185] a holder's behavior must be exceptionally anticompetitive before infringement becomes rational. Piracy is therefore likely to enhance the intellectual property system's purpose because it helps to mitigate some of the burdens intellectual property imposes on markets without impeding innovation or preventing holders from recouping research and development costs.

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180. *See* POSNER, *supra* note 95, at 198 ("The economist's standard response to a black market is to propose abolition of the price control that has brought it into existence."); *but see* David Orozco, *Strategic Legal Bullying*, 13 N.Y.U. J.L. & BUS. 137, 143–44 (2016) (arguing that larger, more resourceful competitors may exploit "efficient infringement" to unfairly compete against smaller competitors).

181. United States v. Whitehead, 559 F.3d 918, 920 (9th Cir. 2009) (remarking that the punishment aspect of criminal law is meant to serve as a deterrent, discouraging individuals from committing crimes); *see also* POSNER, *supra* note 95.

182. *See infra* notes 252–58 and accompanying text.

183. Owen Fletcher, *Fighting China's Pirates*, WALL ST. J. (Oct. 26, 2010, 12:01 AM), https://www.wsj.com/articles/SB10001424052748704300604575554701758669106?mg=id-wsj.

184. *See* Benjamin N. Roin, *Intellectual Property Versus Prizes: Reframing the Debate*, 81 U. CHI. L. REV. 999, 1023 (2014).

185. *See supra* notes 165–168 and accompanying text.

V. THE SMARTPHONE WARS AND OTHER GREAT MOMENTS IN INFRINGEMENT

The following case studies examine when anticompetitive uses of intellectual property rights have incentivized piracy, causing markets to become more competitive, efficient, and innovative.

A. THE PATENT WARS

Apple and Samsung are, paradoxically, symbiotic business partners and fierce adversaries. Their relationship started in 1995 when Apple contracted Samsung to manufacture component parts for several of its products, which would later include the iPhone.[186] Because Samsung aspired to make more than just component parts, it began producing and selling its own line of smartphones known as the Galaxy series.[187] Several years later, Samsung's Galaxy smartphones sparked "the Smartphone Patent War," fundamentally changing the nature of competition and innovation in the smartphone market.[188]

An integral part of Apple's business model involves patenting all aspects of the creative process.[189] This strategy not only allows Apple to impede competitors from copying the products it spends fortunes developing but also permits Apple to fill the market with patents, creating "patent thickets."[190] A patent thicket is an industry saturated with patents making it difficult for entrants to produce competing goods, as they must either license their competitors' blocking patent(s)[191] or expend the resources to design around them.[192] Oftentimes a patent thicket compels

186. Kurt Eichenwald, *The Great Smartphone War*, VANITY FAIR (June 2014), http://www.vanityfair.com/news/business/2014/06/apple-samsung-smartphone-patent-war.

187. *Id.*

188. Jessie Yang, *The Use and Abuse of Patents in the Smartphone Wars: A Need for Change*, 5 CASE W. RES. J.L. TECH. & INTERNET 239 (2014).

189. *See* Eichenwald, *supra* note 186.

190. Jeffrey I. D. Lewis & Ryan M. Mott, *The Sky Is Not Falling: Navigating the Smartphone Patent Thicket*, WIPO MAG. (Feb. 2013), http://www.wipo.int/wipo_magazine/en/2013/01/article_0002.html.

191. In the situation where many patents are a part of a good, a blocking patent is a critical patent that others need to license in order to produce and sell the good. *See, e.g.*, Robert P. Merges, *A Few Kind Words for Absolute Infringement Liability in Patent Law*, 31 BERKELEY TECH. L.J. 1, 25 & n.59 (2016); Margaret Sampson, *The Evolution of the Enablement and Written Description Requirements Under 35 U.S.C. 112 in the Area of Biotechnology*, 15 BERKELEY TECH. L.J. 1233, 1247 (2000) (offering examples of blocking patents).

192. *But see* Carrier, *supra* note 88, at 1069 (describing the advantages of a patent thicket if it causes competitors to invent around the blocking patent, creating innovation).

rival companies to refrain from entering the market all together, stifling competition and innovation.[193] Apple, like other companies, uses their patents as both swords and shields, protecting the innovative process while also deterring aspiring competitors.[194]

As Apple commanded a greater share of the smartphone market, commentators began to suggest that aspects of Apple's business model might violate the Sherman Act.[195] Not only was Apple charging prices that no other company had previously asked for a cellphone but Apple was also, perhaps, using a classic tying arrangement.[196] Apple initially designed the iPhone to work exclusively with AT&T, which, by bundling the iPhone to a specific service, increased the cost of switching one's provider or phone.[197] The ensuing antitrust complaint alleged that Apple sought to monopolize the after–market services for voice and data since it entered into a five–year exclusivity contract with AT&T while also requiring consumers to sign a two–year contract for service, thereby preventing consumers from using their iPhones with another provider.[198] According to the plaintiffs, Apple's arrangement unreasonably and illegally compelled consumers to renew their voice and data agreements; after all, consumers may be more likely to remain with AT&T at the end of their contract knowing that one's iPhone would be inoperable with a different provider.[199]

Critics also asserted that Apple's patent thicket was anticompetitive.[200] By refusing to license foundational technology or charging extraordinary

193. Marshall Leaffer, *Patent Misuse and Innovation*, 10 J. HIGH TECH. L. 142, 163 (2010) (finding that patent thickets can "suppress competition").

194. *See* Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, *in* 1 INNOVATION POLICY AND THE ECONOMY 119, 121 (Adam B. Jaffe et al. eds., 2001).

195. *See, e.g.*, Nick Slatt, *Apple Responds to Spotify Over Anticompetitive Claims*, VERGE (July 1, 2016, 1:34 PM), http://www.theverge.com/2016/7/1/12082398/apple-music-spotify-app-store-legal-feud (discussing allegations that Apple employs anticompetitive tactics).

196. Jeffrey Paul Jarosch, *Reassessing Tying Arrangements at the End of AT&T's iPhone Exclusivity*, 2011 COLUM. BUS. L. REV. 297, 326 (2011) (reviewing claims of Apple's tying arrangement with AT&T).

197. *In re* Apple & AT&T Antitrust Litig., 596 F. Supp. 2d 1288, 1303 (N.D. Cal. 2008).

198. *Id.*

199. *Id.* at 1310.

200. *See, e.g.*, Steve Lohr, *Apple-Samsung Case Shows Smartphone as Legal Magnet*, N.Y TIMES (Aug. 25, 2012), http://www.nytimes.com/2012/08/26/technology/apple-samsung-case-shows-smartphone-as-lawsuit-magnet.html?_r=0 (discussing how the smartphone industry has created a system inundated with patents that Judge Richard Posner has described as "chaos").

fees to do so,[201] Apple's volume of patents prevented upstart companies from competing in the smartphone market. Indeed, the number of active and dormant patents filling the smartphone market increased the odds that entrants would accidentally infringe an existing patent. Because in such an instance a court could issue a permanent injunction barring the sale, use, and production of the infringing good,[202] companies willing to navigate a patent thicket risked wasting resources on developing an ultimately banned good.[203] This spawned allegations that Apple's intellectual property strategy was founded upon securing an overwhelming sum of patents intended to squelch competition.[204]

When Samsung began to sell Galaxy smartphones, Apple's patent thicket presented a significant barrier to entry, though Samsung was hardly deterred. Samsung chose to offer its smartphones in countries where consumers could also purchase an iPhone. According to Apple's CEO and founder Steve Jobs, the Galaxy mimicked almost all aspects of the iPhone, infringing upon many of Apple's patents.[205] And Mr. Jobs was likely correct.[206] Observers remarked that in pursuit of designing high quality smartphones intended to compete against the iPhone, Samsung brazenly copied Apple's ingenuity, daring its competitor to sue.[207] Apple filed suit.[208]

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201. *See* Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine*, 53 ARIZ. L. REV. 165, 166–67 (2011) (describing how a patent thicket may impede innovation and frustrate competition).

202. Gavin D. George, *What is Hiding in the Bushes?* eBay*'s Effect on Holdout Behavior in Patent Thickets*, 13 MICH. TELECOMM. & TECH. L. REV. 557, 567 (2007) (describing how injunctions in patent thickets can give rise to holdup behaviors).

203. *Id.* at 568.

204. *See* Eichenwald, *supra* note 186.

205. Ewan Spence, *Tim Cook Defused Steve Jobs' Thermonuclear War, Then He Took Down Android*, FORBES (Jan. 31, 2015, 6:15 AM), http://www.forbes.com/sites/ewanspence/2015/01/31/how-apple-beat-android/ (quoting Steve Jobs as stating "I will spend my last dying breath if I need to, and I will spend every penny of Apple's $40 billion in the bank, to right this wrong. I'm going to destroy Android, because it's a stolen product. I'm willing to go thermonuclear on this.").

206. Eichenwald, *supra* note 186 ("According to various court records and people who have worked with Samsung, ignoring competitors' patents is not uncommon for the Korean company.").

207. *Id.*

208. Complaint for Patent Infringement, Federal False Designation of Origin and Unfair Competition, Federal Trademark Infringement, State Unfair Competition, Common Law Trademark Infringement, and Unjust Enrichment, Apple, Inc. v. Samsung Elecs. Co., No. 11–CV–01846–LHK (N.D. Cal. Apr. 15, 2011), 2011 WL 1461508.

Samsung countersued claiming some of Apple's patents were invalid while others infringed upon their patents.[209] Due to the global nature of the smartphone market, both companies filed infringement lawsuits in North America, Australia, Europe, and Asia.[210] Eventually Apple and Samsung agreed to wage their war exclusively in the United States, each filing claims in the U.S. Northern District of California.[211] Their litigation spawned several independent lawsuits, at least eight written opinions, numerous trips to the Federal Circuit, a couple of jury trials, and over a billion dollars in legal fees.[212] The Federal Circuit ultimately resolved the first set of claims, finding Samsung had infringed Apple's design patents protecting the iPhone's bezel, resulting in an initial $400 million award.[213] The Supreme Court has since overruled the Federal Circuit's method of calculating damages, remanding the case to the lower court.[214] The Federal Circuit then settled the companies' remaining claims, nullifying Apple's $119.6 million jury award because the Apple patents at issue were either invalid or had not been violated.[215] Although the court awarded Samsung $158,400 royalty for Apple's infringement, Apple was the net winner.[216] The size of the district court's award was meant to deprive Samsung of all its profits made from selling Galaxy phones in the United States, ostensibly to discourage infringement.

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209. Samsung Entities' Answer, Affirmative Defenses, and Counterclaims to Apple Inc.'s Amended Complaint, Apple, Inc. v. Samsung Elecs. Co., No. 11–CV–01846–LHK (N.D. Cal. June 30, 2011), 2011 WL 2731786.

210. Gary L. Benton et al., *The Android Wars: A New Look at the* Apple v. Samsung *Dispute*, SILICON VALLEY ARB. & MEDIATION CTR. 68 (Sept. 2014), www.svamc.org/wp-content/uploads/2015/08/The-Android-Wars-A-New-Look-at-the-Apple-v.-Samsung-Case.pdf.

211. Mikey Campbell, *Apple and Samsung Agree to Settle All Non-US Litigation*, APPLEINSIDER (Aug. 5, 2014, 7:09 PM), http://appleinsider.com/articles/14/08/05/apple-and-samsung-settle-all-non-us-patent-disputes.

212. Vivek Wadhwa, *Why Apple's Defeat to Samsung Was a Victory for Innovation*, HUFFINGTON POST (Mar. 4, 2016, 9:35 AM), http://www.huffingtonpost.com/vivek-wadhwa/why-apples-defeat-to-samsung-was-a-victory-for-innovation_b_9382964.html; Sarah Burstein, *The "Article of Manufacture" in 1887*, 32 BERKELEY TECH. L.J. 1 (2017).

213. Apple, Inc. v. Samsung Elecs. Co., 678 F.3d 1314 (Fed. Cir. 2012); Daniel Fisher, *Samsung Wins at Supreme Court in $400 Million Battle Over Apple iPhone Design,* FORBES (Dec. 6, 2016, 11:40 AM), https://www.forbes.com/sites/danielfisher/2016/12/06/samsung-wins-at-supreme-court-in-400-million-battle-over-apple-iphone-design/.

214. Petition for a Writ of Certiorari, Samsung Elecs. Co. v. Apple Inc., 136 S. Ct. 1453 (2016) (No. 15-777), 2015 WL 10435543.

215. Apple Inc. v. Samsung Elecs. Co., 816 F.3d 788, 792–94, 814 (Fed. Cir. 2016).

216. *See* Mark Wilson, *The Bizarre Patent History Behind the* Apple v. Samsung *Battle*, FASTCODESIGN.COM (Aug. 11, 2016), https://www.fastcodesign.com/3062728/the-bizarre-patent-cases-that-could-make-apple-399-million.

By infringing upon each other's patents, Apple and Samsung likely increased competition and efficiency in the smartphone market. The most obvious result was the global lessening of smartphone prices.[217] Samsung's navigation of Apple's patent thicket expanded the smartphone market beyond a single–player, creating much needed competition. A multinational price war resulted as Apple and Samsung sought to capture segments of previously uncompetitive markets.[218] Their contest remains especially fierce in India, where both companies have substantially cut smartphone prices in hopes of generating brand loyalty.[219] This development may have also caused Apple and AT&T to terminate their purported tying arrangement so that Apple could better compete against Samsung using additional carriers; likewise, AT&T sought to include Samsung smartphones within its inventory, increasing intra and cross–company competition.[220]

Perhaps most importantly, the patent war boosted industry–wide innovation. Soon after Samsung forced its way into the smartphone market, the industry evolved, by certain metrics, into the most innovative sector.[221] For instance, Apple sought to compete against Samsung in emerging markets by designing a cheaper iPhone priced closer to the more affordable Galaxy.[222] Consequently, industry observers credited the competition

217. Matt Hamblen, *Smartphone Prices Are Dropping, and Will Continue to Dip Through '18*, COMPUTER WORLD (May 19, 2014, 2:41 PM), http://www.computerworld.com/article/2489944/smartphones/smartphone-prices-are-dropping--and-will-continue-to-dip-through--18.html.

218. *See* Erik Sherman, *Apple, Samsung and the New Price War*, CBS NEWS (Apr. 10, 2013, 7:42 AM), http://www.cbsnews.com/news/apple-samsung-and-the-new-price-war/ (noting the price wars emerging in Brazil, Asia, and Europe).

219. *See* Kevin Bostic, *Price War Breaks Out Between Apple and Samsung in India*, APPLEINSIDER (Apr. 16, 2014, 3:07 PM), http://appleinsider.com/articles/13/04/16/price-war-breaks-out-between-apple-and-samsung-in-india

220. Marguerite Reardon, *AT&T Prepares for the End to iPhone Exclusivity*, CNET (Nov. 12, 2010, 4:00 AM), https://www.cnet.com/news/at-t-prepares-for-the-end-to-iphone-exclusivity/.

221. Lauren F. Friedman, *The IT Industry Is Out-Innovating All Others By a Longshot*, BUS. INSIDER (May 29, 2015, 1:56 PM), http://www.businessinsider.com/most-innovative-industries-2015-5; Julija Kaminskaite, *The 10 Most Innovative Industries*, GLOBAL INNOVATION MGMT. INST. (May 3, 2016), https://www.giminstitute.org/top-10-most-innovative-industries/.

222. Omar El Akkad & Iain Marlow, *Commodity Boom: The Smartphone's Global Price War*, GLOBE & MAIL (June 1, 2013), http://www.theglobeandmail.com/technology/tech-news/commodity-boom-the-smartphones-global-price-war/article12299152/ (discussing Apple's decision to design a cheaper iPhone in light of the competition generated from Samsung and rival smartphone producers).

between Samsung and Apple for creating a market animated by rapid innovation.[223]

Samsung's decision to infringe was also rational. Although the district court disgorged the company of its U.S. profits from Galaxy sales, Samsung likely accrued more benefits from infringing Apple's patents than had it never marketed the Galaxy. Not only was Samsung able to establish itself in the United States for the sake of future Galaxy iterations, these smartphones are incredibly profitable in non–U.S. markets.[224] While Apple likely lost revenue due to the deterioration of its monopoly, the company still generates enough profits from the iPhone to retroactively incentivize the product's research and development.[225] In other words, Samsung infringed Apple's patents based upon its assessment that the lack of competition in the smartphone market offered a lucrative opportunity. The ensuing patent war brought about the predicted benefits of increased competition and innovation without undermining the patent system's incentives to innovate.

The following narratives likewise illustrate piracy's virtues. In these case studies, anticompetitive uses of intellectual property rights created pricing discrepancies, which in turn attracted and generated competition between licit and pirated goods. In each instance the result was a more competitive market.

B. THE AIDS DRUG WAR IN SOUTH AFRICA

Although by 2001 pharmaceutical breakthroughs had significantly reduced the fatality rate of AIDS in developed countries,[226] developing countries had yet to experience the same progress. During this period, nearly four million South Africans had become infected by the AIDS virus,

223. Angelo Young, *Smartphone Supremacy: How Samsung is Beating Apple—By Design*, SALON (Aug. 5, 2016, 9:00 AM), http://www.salon.com/2016/08/05/smartphone-supremacy-how-samsung-is-beating-apple-by-design/.

224. Alex Konrad, *In Emerging Markets, Samsung is King—While Nokia and Blackberry Are Not Dead Yet*, FORBES (Mar. 28, 2013, 4:58 PM), https://www.forbes.com/sites/alexkonrad/2013/03/28/emerging-market-samsung/.

225. Daniel Eran Dilger, *Apple Now Inhaling 94 Percent of Global Smartphone Profits, Selling Just 14.5% of Total Volumes*, APPLEINSIDER (Nov. 16, 2015, 1:14 PM), http://appleinsider.com/articles/15/11/16/apple-inc-now-inhaling-94-percent-of-global-smartphone-profits-selling-just-145-percent-of-total-volumes.

226. *See* Mark Anderson, *People with HIV Live Almost 20 Years Longer Than in 2001*, GUARDIAN (July 14, 2015, 5:35 AM), http://www.theguardian.com/global-development/2015/jul/14/people-with-hiv-aids-live-nearly-20-years-longer-than-in-2001.

comprising almost 10% of the country.[227] And since most South Africans were unable to afford treatment—which tended to cost about $10,000 annually per person[228]—the South African AIDS crisis appeared primed to worsen.

Despite the *retail* cost of AIDS medications, the price to manufacture certain drugs was only about forty cents per pill.[229] This markup was due to the drug companies' patent rights, which prevented rival companies from selling generic drugs at more competitive prices—or at any price for that matter. Even if the South African government had considered amending its patent laws to permit the importation of generic AIDS drugs, the country's ratification of the TRIPS Agreement (TRIPS) prevented this result. By belonging to the World Trade Organization, South Africa enacted TRIPS, which compelled it to enforce non–domestic patents for a period of twenty years.[230] With limited options, South Africa's government sought price concessions from the drug companies who denied their pleas, stating that patent enforcement was paramount to innovation.[231]

As South Africa's AIDS crisis neared a pinnacle, the South African government announced its intention to purchase generic AIDS drugs in violation of the drug companies' patent rights.[232] Such a transaction was,

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227. *A War Over Drugs and Patents*, ECONOMIST (Mar. 8, 2001), http://www.economist.com/node/529284.

228. Ed Vulliamy, *How Drug Giants Let Millions Die of Aids*, GUARDIAN (Dec. 18, 1999, 7:29 PM), https://www.theguardian.com/uk/1999/dec/19/theobserver.uknews6.

229. Patrick L. Wojahn, *A Conflict of Rights: Intellectual Property Under TRIPS, the Right to Health, and AIDS Drugs*, 6 UCLA J. INT'L L. & FOREIGN AFF. 463, 485 n.152 (2002) (citing Mary T. Griffin, *AIDS Drugs and the Pharmaceutical Industry: A Need for Reform*, 17 AM. J.L. & MED. 363, 393–97 (1991)).

230. *Activists Urge Change to Patent Laws*, IRIN (Nov. 21, 2011), http://www.irinnews.org/report/94272/south-africa-activists-urge-change-patent-laws ("The 1995 TRIPS Agreement made all WTO members beholden to a pharmaceutical patent period of 20 years, during which time no generic could be produced."); *see Drugs, Patents and Poor People*, ECONOMIST (Apr. 18, 2001), http://www.economist.com/node/576903.

231. Tiisetso Motsoeneng, *South Africa Slams Big Pharma in Generic Drugs Row*, REUTERS (Jan. 17, 2014), http://www.reuters.com/article/us-safrica-pharma-idUSBREA0G0N720140117; IRIN, *supra* note 230; *see also* ECONOMIST, *supra* note 230 ("[T]he drug firms have . . . insisted that they must fight to protect their patents if they are to maintain the revenue and profits necessary to finance the development of new treatments.").

232. Rachel L. Swarns, *AIDS Drug Battle Deepens in Africa*, N.Y. TIMES (Mar. 8, 2001), www.nytimes.com/2001/03/08/world/aids-drug-battle-deepens-in-africa.html ("An Indian maker of generic drugs asked South Africa today to give it the right to sell eight AIDS drugs currently available only from patent-holding multinational companies at high prices.").

according to South Africa, justified as a means to counter the country's epidemic.[233] South Africa's overtures attracted Cipla and Hetero Ltd., two Indian generic manufacturers offering to sell copycat AIDS drugs for about $600 per patient annually.[234] To facilitate this deal, South Africa amended its national patent laws—despite belonging to TRIPS[235]—to permit parallel importation and compulsory licensing of infringing drugs.[236] Parallel importation refers to the importation of patent–infringing drugs from third countries so long as the goods do not violate the third country's laws.[237] Compulsory licensing allows governments to replicate drugs locally if the patent holders' price demands are deemed extraordinary.[238]

Thirty–nine Western pharmaceutical companies claimed this purchase of generic drugs would violate South Africa's Constitution as well as the TRIPS agreement.[239] They argued TRIPS provided no loopholes or exigencies through which the South African government may operate.[240] According to them, the South African government was about to become the world's most brazen patent pirate.[241]

Western drug makers, faced with this new competition, sought to ward off the generic drug companies using a market strategy: they lowered their prices.[242] Five companies—Merck, Bristol-Myers Squibb, Roche Holding, GlaxoSmithKline, and Boehringer Ingelheim—announced they would

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233. ECONOMIST, *supra* note 230 ("In order to save lives, the government says it should sometimes be allowed to infringe these patents.")

234. Swarns, *supra* note 232.

235. Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods: General Agreement on Tariffs and Trade-Multilateral Trade Negotiations art. 31, Apr. 15, 1994, 1869 U.N.T.S. 299, 313, 33 I.L.M. 1125, 1209.

236. ECONOMIST, *supra* note 230.

237. ECONOMIST, *supra* note 227.

238. ECONOMIST, *supra* note 230.

239. Mark Schoofs & Michael Waldholz, *Price War Breaks Out Over AIDS Drugs in Africa as Generics Present Challenge*, WALL ST. J. (Mar. 7, 2001, 5:01 AM), http://www.wsj.com/articles/SB983915787153550680; ECONOMIST, *supra* note 227.

240. *See* ECONOMIST, *supra* note 230 (explaining that the drugs companies asserted the South African government's proposed law was an abuse of discretion among other arguments in favor of strong patent rights).

241. *Cipla's 'Crusade' Moves Company into International Market for AIDS Drugs, Wall Street Journal Reports*, KAISER HEALTH NEWS (Mar. 12, 2001), http://khn.org/morning-breakout/dr00003331/ ("Multinational drug companies call the generic drug makers 'patent pirates' . . . .").

242. Rachel L. Swarns, *Drug Makers Drop South Africa Suit Over AIDS Medicine*, N.Y. TIMES (Apr. 20, 2001), http://www.nytimes.com/2001/04/20/world/drug-makers-drop-south-africa-suit-over-aids-medicine.html ("During the past two years, the price of anti-AIDS drugs in Africa have plummeted to $1,000 a year per patient for patented drug cocktails . . . from $10,000 . . . .").

discount AIDS drugs by 70–90%.[243] As a direct result of the South African government seeking to purchase generic drugs, the pharmaceutical companies offered price cuts once described as "impossible."[244]

South Africa's drug deal sparked an even greater competition between the Western patent holders and infringing manufacturers.[245] The government rejected the price concessions—which the drugs companies hoped would deter a costly patent battle—deciding instead to purchase the generic drugs.[246] Hetero announced that it would sell a certain AIDS drug for only $347 annually[247] while Cipla promised to supply a cocktail for $600 per patient annually, undercutting the patent holders by around 50%.[248] In response, the Western drug companies lowered their prices even further, approaching the Indian manufacturers' levels.[249] Bristol-Myers reduced Stavudine's price from $300 annually to $54 annually, slashing the cocktail's overall cost to around $900 per patient annually.[250] The Wall Street Journal reported that the generic drugs had created an "extraordinary" price war in which patent holders were attempting to "blunt" the market's shift towards pirated AIDS drugs.[251]

It soon became clear that this sudden influx of infringing goods had bolstered competition and efficiency in the market for AIDS drugs.[252] Before the South African government imported the generics, a market failure had persisted in which South African buyers were unable to buy and sellers unwilling to sell AIDS drugs at mutually agreeable prices—which brought with it horrifying and unacceptable human costs. It was only when South Africa purchased infringing drugs that the pharmaceutical companies supplied the country with competitively priced drugs in an attempt to protect their markets. It is important to note the pharmaceutical companies continue to innovate new AIDS drugs, indicating piracy has done little to undermine

243. *Bristol-Myers Squibb Offers to Sell AIDS Drugs in Africa at Below Cost*, HIV I-BASE (Apr. 17, 2001), http://i-base.info/htb/4299; ECONOMIST, *supra* note 227.

244. KAISER HEALTH NEWS, *supra* note 241.

245. HIV I-BASE, *supra* note 243.

246. *Id.* (noting that only Rwanda, Uganda, Senegal, and the Ivory Coast accepted the drug companies' proposition).

247. Schoofs & Waldholz, *supra* note 239.

248. HIV I-BASE, *supra* note 243; Schoofs & Waldholz, *supra* note 239 ("Merck & Co. Tuesday confirmed it is slashing the prices for two of its important AIDS-fighting drugs in Africa by 40% to 55% . . . .").

249. HIV I-BASE, *supra* note 243.

250. *Id.*

251. Schoofs & Waldholz, *supra* note 239.

252. *See id.*

the patent system's incentives to create.[253] In fact, the result of South Africa's purchase of infringing drugs inspired the Doha Declaration, which amended the TRIPS agreement to relax patent protections for certain middle–income nations.[254] Shortly thereafter, the crisis took a promising turn to a point where commentators assert the more affordable treatments have raised South Africa's national life expectancy by five years.[255]

C. ONLINE STREAMING OF COPYRIGHTED MATERIAL

The DVD's popularity has waned in favor of online streaming.[256] This is hardly surprising considering the frustration consumers harbor for the DVD era. After all, DVDs were expensive, rental late fees were aggravating, and the studios would only release new movies for home viewing long after they had left the cinemas.[257] The studios, though, had little desire to change their model in light of the monopoly profits available to them. Competitors were unable to cure these defects because the studios' copyright protections insulated them from competition. This dissatisfaction, however, generated opportunity.[258]

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253. Nikhil Kumar, *Big Pharma and the Business of HIV/AIDS*, INDEPENDENT (Dec. 1, 2010), http://www.independent.co.uk/news/business/analysis-and-features/big-pharma-and-the-business-of-hivaids-2147987.html; Josh Ruxin, *AIDS Drugs—For Profit or Not?*, FORBES (Nov. 11, 2010, 10:47 AM), http://www.forbes.com/sites/sciencebiz/2010/11/11/aids-drugs-—-for-profit-or-not/ (explaining that the drugs companies were plenty profitable despite dropping prices); *see also* Michael Johnsen, *PhRMA: 44 Medicines and Vaccines for HIV/AIDS Treatment and Prevention in Development*, DRUG STORE NEWS (Sept. 10, 2014), http://www.drugstorenews.com/article/phrma-44-medicines-and-vaccines-hivaids-treatment-and-prevention-development/.

254. Two–thirds of WTO members must accept the amendment in order for it to come into effect. The deadline is December 31, 2017. *Amendment to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/trips_e/tripsfacsheet_e.htm (last accessed Sept. 17, 2017); *see also* James Thuo Gathii, *The Legal Status of the Doha Declaration on TRIPS and Public Health Under the Vienna Convention on the Law of Treaties*, 15 HARV. J.L. & TECH. 291, 296 (2002).

255. David Smith, *AIDS Drugs Increase South African Life Expectancy by Five Years*, GUARDIAN (Dec. 3, 2012, 3:01 PM); https://www.theguardian.com/world/2012/dec/03/aids-drugs-south-african-life.

256. *See* Dirk Libbey, *Why Redbox Is Having Serious Problems,* CINEMABLEND (Feb. 18, 2016), http://www.cinemablend.com/new/Why-Redbox-Having-Serious-Problems-113087.html (discussing how Redbox, a company that rents physical DVDs, is quickly losing revenue due to the rise of online streaming).

257. *See, e.g.*, Louis Bedigian, *Even Carl Icahn Won't Be Able to Turn Blockbuster Around*, BUS. INSIDER (Apr. 5, 2011, 2:53 PM), http://www.businessinsider.com/even-carl-icahn-wont-be-able-to-turn-blockbuster-around-2011-4.

258. *See* David Pogue, *How Hollywood is Encouraging Online Piracy: The Death of the DVD is Pushing Users to Piracy*, SCI. AM. (Sept. 1, 2012),

Online pirates discovered that online streaming promised a more efficient means to supply copyright–infringing movies to a global audience—far superior than the prior generation's bootlegged DVDs.[259] Viewers needed only an internet connection to watch streamed movies, enabling pirates to service remote regions. And since pirates could offer movies cheaply, without late fees, and before stores could supply them,[260] illegal streaming's popularity escalated.[261]

Similar to the prior narratives, the emergence of digital pirated movies became the key event enhancing both innovation and competition in the movie market.[262] As the studios lost revenue to online piracy, they began to reconsider their traditional ways of distributing content. This phenomenon caused a spike in industry innovation meant to compete against online piracy: these efforts led to Netflix and Hulu, as well as other similar streaming services, offering consumers a legal means to purchase and watch copyrighted works.[263] Not only do these new services offer a more competitive price, but they also provide a superior service by, for example, expediting the process by which movies become available for home viewing.[264] Also jettisoned were late fees and long delays before public

http://www.scientificamerican.com/article/how-hollywood-encouraging-onine-piracy/ (asserting that the refusal of movie studios to distribute movies in accordance with consumer demands is causing consumers to patronize black market supplies).

259. *See* Ernesto Van der Sar, *Piracy Isn't Killing the Movie Industry, Greed Is*, TORRENTFREAK (Feb. 22, 2010), https://torrentfreak.com/piracy-isnt-killing-the-movie-industry-greed-is-100222/ ("Much like the big music labels, the studios are trying to control how people consume media to an extent where it becomes impossible for innovative retailers to offer a product that can compete with piracy. By this process they are killing their own business and that of many retailers, while blaming piracy for the damages.").

260. *See* Pogue, *supra* note 258.

261. *See* Diana Lodderhose, *Movie Piracy: Threat to the Future of Films Intensifies*, GUARDIAN (July 17, 2014), https://www.theguardian.com/film/2014/jul/17/digital-piracy-film-online-counterfeit-dvds.

262. *See* Ian Paul, *Netflix Says Popcorn Time's Easy-Peasy Movie Piracy is a Serious Threat*, TECHHIVE (Jan. 22, 2015, 8:14 AM), http://www.techhive.com/article/2873643/netflix-says-popcorn-times-easy-peasy-movie-piracy-is-a-serious-threat.html (explaining, for example, that the piracy on Popcorn Time may force more content owners to make their movies available through legal streaming services, increasing competition).

263. *See* Pogue, *supra* note 258 (mentioning that movies studios began harnessing the internet to sell and rent movies versus resisting it).

264. Frederic Filloux, *Different Release Times of Films and TV Shows Boost Global Piracy*, GUARDIAN (Nov. 26, 2012, 10:09 AM), https://www.theguardian.com/technology/2012/nov/26/films-tvs-global-piracy (explaining that the studios have substantially shortened the window to release films for home viewing because of the threat piracy poses).

release dates.[265] Even though legally streamed movies are now mainstream, the threat of piracy continues to promote competition and innovation in the movie industry. For instance, industry insiders openly discuss pirated content suppliers as their primary competition,[266] evidenced by how the price of a Netflix subscription is based upon a locale's rate of piracy. As mentioned earlier, when piracy is greater, Netflix charges less for a subscription in order to attract consumers away from the illegal streaming sites.[267] Apple has expressed similar sentiments with respect to online music.[268] Thus the manner in which the studios have sought to compete against illegal streaming services has directly enhanced this market's efficiency and rate of innovation.

Importantly, illegal streaming has done little to reduce the incentives to create. Despite the revenue that piracy has usurped from the studios, the movie industry has, and continues to, generate enough revenue to not only compensate its creative efforts but also to incentivize future works. The movie studios' revenues have increased nearly every year until 2005 when digital piracy emerged.[269] This loss prompted Netflix's venture into streaming and Hulu's founding in 2006, which boosted the studios' gross revenue into a record–breaking year in 2007.[270] Indeed, commentators

265. *See* Andy Maxwell, *Movie Piracy Combated by Narrowing Theatrical Release Window*, TORRENTFREAK (June 16, 2014), https://torrentfreak.com/movie-piracy-combated-by-narrowing-theatrical-release-window-140616/.

266. Paul, *supra* note 262; Letter from Reed Hastings, CEO of Netflix, & David Wells, CFO of Netflix, to Shareholders (Jan. 20, 2015), http://files.shareholder.com/downloads/NFLX/3874203383x0x804108/043a3015-36ec-49b9-907c-27960f1a7e57/Q4_14_Letter_to_shareholders.pdf; Lily Hay Newman, *Netflix Says Piracy Is Still Its Biggest Competitor*, SLATE (Jan. 23, 2015, 2:08 PM), http://www.slate.com/blogs/future_tense/2015/01/23/piracy_is_biggest_netflix_competitor_says_shareholder_letter.html.

267. Adam Westlake, *Overseas Netflix Prices Determined by Piracy Levels*, SLASH GEAR (Apr. 19, 2015), http://www.slashgear.com/overseas-netflix-prices-determined-by-piracy-levels-19379768/ ("Wells says Netflix views illegal downloads not as some society-destroying evil, but as primary competition. 'We wouldn't want to come out with a high price because there's a lot of piracy, so we have to compete with that,' the CFO said. If a local population is already comfortable with pirating their media, one of the only ways to convert them to customers is with an attractive price.").

268. *See* Ryan Faughnder, *Music Piracy Is Down But Still Very Much in Play*, L.A. TIMES (June 28, 2015, 7:17 PM), http://www.latimes.com/business/la-et-ct-state-of-stealing-music-20150620-story.html.

269. *See, e.g.*, *Yearly Box Office*, BOX OFFICE MOJO, http://www.boxofficemojo.com/yearly/ (last accessed Sept. 17, 2017); Natalie Robehmed, *Hollywood's Most Profitable Movie Studios*, FORBES (May 15, 2015, 8:30 AM), www.forbes.com/sites/natalierobehmed/2015/05/15/disney-is-hollywoods-most-profitable-movie-studio/ (mentioning that NBCUniversal, for instance, had its most profitable year in 2015).

270. BOX OFFICE MOJO, *supra* note 269.

credit the immediate availability of pirated content with inspiring the innovation of legal on–demand services, generating new and lucrative revenue streams for the studios.[271] Ever since, the studios have almost always achieved a gross total of revenue exceeding the prior year. For example, in 2015, the studios grossed nearly a billion dollars more than 2014.[272] Even though piracy is certainly cannibalizing some of the studios' profits, the assault on the movie studios' copyrights has inspired the industry to generate a more competitive and innovative product, promoting creation and bolstering the copyright system's efficacy.

It should also be noted this phenomenon is not unique to movie streaming; sports broadcasting has had a similar experience[273] Major League Baseball (MLB), the National Hockey League, and other professional leagues have historically offered subscriptions to watch games in ways commentators allege to be anticompetitive.[274] For example, MLB required online subscribers to purchase the league's entire slate of games, offering no reduced packages for those endeavoring to watch only their favorite teams.[275] The league might have also restrained trade by vesting teams with regional monopoly rights, which barred consumers from streaming games played within their geographic radius.[276] In turn, those who bought a league pass were forced to purchase games they had no intention of watching while limiting the games they did actually desire to see.[277]

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271. *See* Jake Rossen, *How Hollywood Can Capitalize on Piracy*, BUS. IMPACT (Oct. 17, 2013), https://www.technologyreview.com/s/520336/how-hollywood-can-capitalize-on-piracy/.

272. *See* BOX OFFICE MOJO, *supra* note 269.

273. *See, e.g.*, Howard Swains, *Free Football Streaming: How Illegal Sites Keep Outpacing Broadcasters*, GUARDIAN (Aug. 1, 2015, 4:57 AM), http://www.theguardian.com/football/2015/aug/01/faster-easier-free-illegal-football-streams (discussing the illegal streaming of Premier League Soccer).

274. *See* Laumann v. Nat'l Hockey League, 56 F. Supp. 3d 280, 300 (S.D.N.Y. 2014) ("[T]he Leagues purport to bolster regional interest and team loyalty by consciously depriving consumers of out-of-market games they would prefer, which is generally not a permissible aim under the antitrust laws."); *see also* Bob Van Voris & Gerry Smith, *Baseball Goes on Trial for Millions of Fans, Billions of Dollars*, BLOOMBERG TECH. (Jan. 19, 2016, 2:00 AM), http://www.bloomberg.com/news/articles/2016-01-19/baseball-goes-on-trial-for-millions-of-fans-billions-of-dollars.

275. *See* Ian Casselberry, *MLB Offers Single-Team Packages, Lower MLB.TV Rates in Antitrust Suit Settlement*, AWFULANNOUNCING.COM (Jan. 19, 2016), http://awfulannouncing.com/2016/mlb-offers-single-team-packages-lower-mlb-tv-rates-in-antitrust-suit-settlement.html.

276. *See Laumann*, 56 F. Supp. 3d at 288.

277. *See id.*

Similarly, the exclusionary means used by the leagues to sell online events was the genesis of illegally streamed sporting services, prompting the leagues to respond similarly.[278] The leagues have described fighting illicit sites as a game of "whack–a–mole," claiming every time one site is eliminated, another arises.[279] In turn, MLB sought to redirect traffic away from the illegal sites to their own licensed content.[280] Several leagues unbundled their streaming packages; MLB now allows consumers to purchase cheaper packages consisting only of one's preferred teams.[281] Importantly, most professional leagues continue to generate record revenue from streaming and television despite the profits lost to piracy and unbundled packages.[282]

In sum, the rise of illegally streamed sporting events mirrors the movie, pharmaceutical, and smartphone industries whereby piracy bolstered market competition and innovation without undermining intellectual property's incentives to create. The law rarely, however, recognizes piracy's benefits when intellectual property could promote acts of infringement to enhance markets and innovation.

VI. APPLYING THE ECONOMICS OF INFRINGEMENT TO REFORM INTELLECTUAL PROPERTY RIGHTS

The intellectual property system is widely thought to incentivize a suboptimal level of creativity and an unjustified amount of deadweight

278. *See* Josh Peter, *Digital Pirates Steal Signals, Money from Leagues*, USA TODAY (Oct. 8, 2014, 8:47 AM), http://www.usatoday.com/story/sports/2014/10/07/television-pirates-pay-per-view-ufc-nfl-nba-nhl-mlb/16871583/ (discussing the revenue major sporting leagues have lost to piracy and illegal online streaming).

279. Sam Harnett, *Pushing Back Against a New Wave of Piracy*, MARKETPLACE (June 30, 2015, 3:52 PM), http://www.marketplace.org/2015/06/30/business/pushing-back-against-new-wave-piracy.

280. *See* Marc Edelman, *From Meerkat to Periscope: Does Intellectual Property Law Prohibit the Live Streaming of Commercial Sporting Events*, 39 COLUM. J. L. & ARTS 469, 475–76 (2016) (remarking that sports leagues are increasingly concerned with the prevalence of illegal streaming providers and are seeking ways to mitigate this phenomenon).

281. *See* Bob Van Voris & Gerry Smith, *MLB Settlement Gives Baseball Fans New Viewing Options*, BLOOMBERG BUS. (Jan. 19, 2016, 3:20 PM), www.bloomberg.com/news/articles/2016-01-19/major-league-baseball-settles-with-fans-over-game-telecasts.

282. *See, e.g.*, Maury Brown, *Major League Baseball Sees Record $9 Billion in Revenues for 2014*, FORBES (Dec. 10, 2014, 7:00 AM), http://www.forbes.com/sites/maurybrown/2014/12/10/major-league-baseball-sees-record-9-billion-in-revenues-for-2014/.

loss.[283] The problem, as this Part explains, is that the cost of infringing is too expensive. From an economic perspective, remedies are meant to increase an act's costs to discourage actors from committing that act.[284] But in the intellectual property context, infringement remedies are so costly such that most actors refrain from infringing upon another's rights even if doing so would increase competition, efficiency, and innovation. This Part proposes a market for infringement, which would set the price of infringement high enough to incentivize innovation, but not so steep that holders would excessively restrain trade. To achieve this end, the next Sections enumerate a series of reforms to intellectual property law's method of calculating monetary awards, issuing equitable remedies, enhancing damages, and characterizing piracy. By creating a market–based scheme embracing piracy's procompetitive effects, the following proposals would better generate innovation without the current system's attendant inefficiencies.

A. THE INTELLECTUAL PROPERTY SYSTEM SHOULD AVOID VIEWING INFRINGEMENT AS A NORMATIVELY BAD ACT

As a starting point, the law's treatment of infringement as an antisocial behavior should be curtailed. By stripping infringement of its normative foundation, the law should no longer make a distinction between acts of willful and accidental infringement. As earlier outlined, the patent and copyright systems are currently designed to remedy instances of willful infringement using punitive damages that far exceed the injuries caused by the act, explicitly treating events of accidental infringement as more benign.[285] But in actuality, the types of piracy that generate competition and innovation are often intentional.[286]

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283. *See* BOHANNAN & HOVENKAMP, *supra* note 15, at xiv; Roin, *supra* note 184, at 1001–02 ("[T]he allure of monopoly profits offers imperfect incentives for innovation, providing inadequate rewards for many socially valuable inventions while overrewarding some socially wasteful inventions.").

284. *See* Rebecca Hollander-Blumoff, *Crime, Punishment, and the Psychology of Self-Control*, 61 EMORY L.J. 501, 511(2012) (explaining the effects of legal deterrence through sanctions in the criminal law context: "The law and economics vision of crime suggests that individuals chose to engage in certain behaviors because the benefits outweigh the costs and that criminal law provides a set of deterrents against engaging in specific behavior. Thus deterrence provides society with a way to prevent crime by increasing the costs of criminal behavior.").

285. *See, e.g.*, Seymour v. McCormick, 57 U.S. 480, 489 (1853) ("[W]here the injury is wanton or malicious, a jury may inflict vindictive or exemplary damages, not to recompense the plaintiff, but to punish the defendant.").

286. *See supra* Part V.

In fact, piracy's benefits may make some level of law breaking necessary. It is rarely suggested that illegal conduct serves a societal utility; after all, the very nature of criminalizing a behavior signals that its perpetration is never acceptable.[287] Here, because individual acts of piracy remain undesirable when a pirate free rides on a creator's ingenuity, the law should favor intellectual property holders as opposed to pirates.[288] But in the aggregate, the black market's presence establishes an upper ceiling on anticompetitive conduct whereby holders may profit from their innovation yet cannot exploit the intellectual property system in a manner that hinders markets. Piracy is, in turn, a naturally occurring barrier preventing intellectual property holders from pursuing the theoretical harms scholars have long thought were endemic under the current intellectual property system.

Since society benefits from certain acts of willful infringement, a legal framework designed to always deter infringement lacks a persuasive justification—in fact, the law should sometimes *encourage* infringement. The following proposals adhere to this general guideline by eliminating the normative characterization of infringement.

B. HOW TO REFORM EQUITABLE REMEDIES

The availability of equitable relief primarily hinders the socially beneficial acts of infringement. For over a century, courts have likened infringement to trespassing, remedying both acts with equitable remedies in order to prevent ongoing and future transgressions.[289] Under the current law, a court deciding whether to issue an injunction to estop infringement must apply the traditional principles of equity. Accordingly, an injunction is more likely when the holder is a practicing entity that has suffered actual harm.[290] This determination focuses exclusively on the holder's injuries

287. *See generally* David Fagundes, *Efficient Copyright Infringement*, 98 IOWA L. REV. 1791 (2013) (explaining how infringement may service a positive utility despite the punitive remedies sanctioning acts thereof).

288. *See, e.g.*, Marney L. Cheek, *The Limits of Informal Regulatory Cooperation in International Affairs: A Review of the Global Intellectual Property Regime*, 33 GEO. WASH. INT'L L. REV. 277, 285 (2001) (describing how piracy free rides on the efforts of licit producers in the technology industry).

289. *Id.*; *see also* Balganesh, *supra* note 109, at 645 & n.193 ("Where both (1) the [property] right and (2) its breach were proven, the issuance of an injunction became in a sense mechanical . . . ."); Abraham Bell & Gideon Parchomovsky, *A Theory of Property*, 90 CORNELL L. REV. 531, 597–98, 600 (2005) (explaining the fundamental role of injunctions supporting the property right to exclude).

290. *See* eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388, 391–92 (2006) (applying the principles of equity to patent disputes).

without giving any weight to whether an act of infringement offers desirable competitive or innovative effects. As a result, a court may grant an injunction barring the production, use, and sale of an infringing copy even when the conduct bolsters efficiency and innovation.[291]

Other bodies of law have taken a much different approach by seldom granting equitable remedies. Contract law, for example, strongly disfavors equitable remedies, instead allowing parties to choose whether to breach a contract so long as the breaching party pays monetary damages.[292] Contract damages are only meant to put the non–breaching party in the same position had the breaching party performed the contract—providing no punitive mechanisms—so as to incentivize contracting parties to breach an agreement when all parties would either benefit or remain in the same place.[293] The logic of this policy is to promote social welfare: "properly calculated expectation damages increase economic efficiency by giving the other party an incentive to break the contract if, but only if, he gains enough from the breach that he can compensate the injured party for his losses and still retain some of the benefits from the breach."[294] This is known as the efficient breach doctrine. By avoiding a moral or normative stance towards broken agreements, this approach contrasts with the intellectual property system, which uses equitable remedies to estop infringement based upon the harms done to a rights holder and gives little consideration to whether an act increases societal goals.[295]

Patent and copyright laws should be reformed akin to contract law so that the primary remedy a court may issue is monetary damages. As this Article has explained, even without equitable remedies, third parties would be unlikely to commit socially undesirable acts of piracy so long as the

291. Hovenkamp & Cotter, *supra* note 21, at 874–75.

292. *See* Ganesh Sitaraman, *Contracting Around* Citizens United, 114 COLUM. L. REV. 755, 790 (2014) ("[S]pecific performance has generally been disfavored in contract law, particularly when real property and unique goods are not at issue; payment of monetary damages to the injured party is now the preferred remedy.").

293. *See* Allapattah Servs., Inc. v. Exxon Corp., 61 F. Supp. 2d 1326, 1329 (S.D. Fla. 1999) ("This acceptance of intentional, efficient breaches has been uniformly adopted among the jurisdictions."); *see also* Reiver v. Murdoch & Walsh, P.A., 625 F. Supp. 998, 1015 (D. Del. 1985) ("[S]ome breaches may be intentional and . . . efficient . . . when the payment of damages would be less costly than performance.").

294. Bhole, Inc. v. Shore Invs., Inc., 67 A.3d 444, 453 n.39 (Del. 2013) (alteration in original).

295. *See generally* Ian R. Macneil, *Efficient Breach of Contract: Circles in the Sky*, 68 VA. L. REV. 947 (1982) (explaining the concept of an efficient contract breach).

measure of monetary damages is set at an adequately high level.[296] In fact, this development would actually boost innovation since entrenched holders could no longer foreclose socially beneficial, albeit infringing, inventions from the market. By disfavoring equitable remedies, the intellectual property system could incentivize acts of infringement when the benefits outpace the attendant costs—i.e., the damages paid to the holder—promoting heightened competition, innovation, and economic efficiency.[297]

There is still, however, room for equitable remedies. As in contract law, courts should issue an injunction barring future acts of infringement when monetary damages are inadequate. With respect to patents and copyrights, monetary damages tend to be inadequate when the market for the protected good is very small or—again akin to contract law—the patented or copyright good is unique.[298] A unique good is one that is produced in singular or very limited quantities. The reason for protecting a unique good with equitable remedies is derived from how reproduction can deplete a unique good's value. It is axiomatic in economics that a good's value is based upon its scarcity. Because the production of, for example, ten infringing copies of a unique good increases its supply by 1000%, piracy can so alter the supply and demand curve to devastate the value of each unit. In other words, piracy can rob the value a unique good derives from being one of a kind. Piracy can also undermine a unique good's value by distorting the demand side of the curve. Often, there is such a small market for a unique good—indeed, otherwise the artist would have created it in greater volume—that illicitly increasing its production can exhaust the good's demand. Equitable remedies are thus more appropriate for unique goods, and similar products with small markets, since the introduction of infringing copies can lower the licit product's value, making the provision of legal damages inadequate.

Such a rule would, for instance, allow an artist to seek an injunction against those producing forged copies of her unique painting or sculpture. Another situation when monetary damages would be inadequate is when the profits in a market are so minimal that a patented or copyright good cannot possibly face competition and remain profitable. In some markets, only enough demand exists to support the protected good, necessitating a court–

296. *See* Crane, *supra* note 37, at 263–65 (discussing the use of injunctions in patent law, and suggesting that legal damages should be favored over injunctive relief for efficiency's sake).

297. *See* Fagundes, *supra* note 287, at 1812–14 (discussing how actors respond to the costs and benefits of infringing a copyright, i.e., private ordering, and how this may encourage efficient infringements).

298. *See* Klein v. PepsiCo, Inc., 845 F.2d 76, 80 (4th Cir. 1988) (stating that a buyer of goods may seek specific performance upon a contract breach if the goods are unique).

issued injunction to block the pirated version. Although piracy is unlikely to arise where profits are small, this rule is important to assure entrepreneurs that it is worth designing a good to service a market where only one product is likely to survive.

Reforming intellectual property law in such a manner is hardly a radical idea but instead, consistent with intellectual property's current trajectory. Although property rules have traditionally governed the patent and copyright systems, courts have begun shifting intellectual property into a liability framework.[299] The difference between property and liability rules is substantial: property laws create an almost absolute right to exclude, whereas liability rules grant only the right to receive damages *after* a trespass or breach has occurred.[300] Since a liability framework prevents holders from impeding ongoing and future acts of infringement,[301] the above proposal hastens intellectual property law's progress in the direction that it has already begun to take but via an amended path.

A foreseeable critique is that by eliminating equitable remedies, the intellectual property system would transfer revenue from original innovators to infringers. This is true but hardly problematic. Intellectual property rights are meant to generate economic development via increased innovation, not to enrich authors and inventors.[302] Properly calibrating monetary damages would therefore serve intellectual property's purpose without providing authors such a bounty of private rewards to undermine the intellectual property system's efficiency and innovative incentives.

C. THE CASE FOR RESTRUCTURING LEGAL DAMAGES

The most desirable system to remedy infringement would allow the market to dictate when and where infringement occurs. Monetary damages are currently calculated in a manner that fails to achieve intellectual property law's objectives, which is to stimulate the most innovation using the fewest private incentives.[303] Recall that in the patent context, patentees

299. Crane, *supra* note 37, at 254 (discussing the move towards a liability regime).

300. *See generally* Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713, 715 (1996) ("The state has at its disposal two fundamental ways of protecting property rights. On one hand, it may adopt *property rules*, under which it guarantees property right assignments against infringement through the threatened use of its police powers. On the other hand, the state may employ *liability rules*, under which it merely discourages violations by requiring transgressors to pay victims for the harms suffered.").

301. *See generally* Crane, *supra* note 37, at 255–56 (discussing the advantages of a property–based scheme versus a liability–based scheme of intellectual property rights).

302. *See supra* note 25 and accompanying text.

303. *See id.*

are entitled to "at least" a reasonable royalty or lost profits resulting from the infringement. Courts commonly measure a reasonable royalty by issuing an amount for which the patentee had previously licensed her technology.[304] Otherwise a court must approximate the terms of a hypothetical license had the parties engaged in such a negotiation. If the infringement is deemed to have been willful, a court may triple the holder's actual injuries, generating a windfall award.[305] This framework fails to achieve intellectual property's purpose.

Furthermore, granting punitive damages should be retired as a relic. By awarding punitive damages, a court must make an unnecessary distinction about whether one's infringement was willful, as the efficiency of infringing is unaffected by whether it was done intentionally. Since innovation and competition benefit from a degree of willful infringement, intellectual property law should operate similarly to contract law by eliminating economically inefficient awards based upon an infringer's mens rea. In the patent context, allowing treble damages to persist mistakenly treats certain types of infringement as antisocial and generates extraordinary disincentives against infringement even when society may benefit from the act. Instead, wisely measured monetary damages would appropriately incentivize parties to infringe or not.

Likewise, in the copyright context, a court may remedy willful infringement with enhanced statutory remedies equaling up to $150,000 per act.[306] In light of this remedy's punitive nature, statutory damages are meant to tax an infringer at a rate surpassing the copyright owner's actual damages, overly discouraging infringement. Thus, using the same logic used in the patent context, issuing punitive statutory damages without regard for an act's social utility neither advances innovation nor serves an economically efficient purpose.

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304. *See* Georgia-Pac. Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (providing that a court should consider previous royalties charged by the patentee to determine current rates).

305. *In re* Seagate Tech., LLC, 497 F.3d 1360, 1382–83 (Fed. Cir. 2007) (discussing the availability of treble damages in patent law); *see also* Powers & Carlson, *supra* note 49, at 82 (discussing the current law to determine whether treble damages are warranted: "A court will consider the following factors: (1) whether the infringer deliberately copied the ideas or design of another; (2) whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed, and (3) the infringer's behavior as a party to the litigation.").

306. 17 U.S.C. § 504(c)(2) (2012).

In addition, the manner in which a court may currently establish a reasonable royalty rate also creates an inefficient incentive structure. Reasonable royalties are problematic because they essentially allow copyright or patent holders to name their own price in damages, as opposed to a socially desirable rate. To illustrate, consider the role of liquidated damages in contract law. Most courts refuse to enforce a liquidated damages clause unless it reflects a reasonable forecast of actual damages. Such a limitation is necessary because excessive liquidated damages dissuade contracting parties from efficiently breaching their agreement when dogged adherence is suboptimal; in fact, unreasonable liquidated damages are considered penalties, which undermine the efficiency of contract law's compensatory scheme.[307] These same inefficiencies are true of reasonable royalties. By mimicking prior licensing agreements to calculate a reasonable royalty, the court is likely to pick a price that could be—and often is—extraordinarily greater than the patent's actual market value or the holder's actual loss. This is because holders often incorporate the effects of an anticompetitive behavior into their licensing agreements; for instance, if a holder is able to block advancements by refusing to license a patent, the holder is likely to account for the patent's blocking value into her license's pricing scheme.[308] The lodestar factors for courts to consider when calculating damages in a patent dispute explicitly includes the patentee's desire to preserve a monopoly: "[t]he licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention."[309] Since a court is likely to consider this royalty rate in an infringement case, it is essentially rewarding and compensating a holder for their anticompetitive preferences. Such a method of remedying infringement, although in a holder's best interest, ignores the social objectives set forth in the Constitution's Intellectual Property Clause by failing to promote innovation while simultaneously harming competition.

Instead damages for patent infringement should be calculated based upon the cost expended by the holder plus a reasonable premium as explained below.[310] The logic of basing royalty rates upon the holder's

307. Michael Pressman, *The Two-Contract Approach to Liquidated Damages: A New Framework for Exploring the Penalty Clause Debate*, 7 VA. L. & BUS. REV. 651, 660–61 (2013) (presenting the economic arguments about why penalty clauses can lead to inefficient outcomes).

308. *See supra* notes 32–34 and accompanying text.

309. *Georgia-Pac.*, 318 F. Supp. at 1120.

310. Previous works have discussed tailoring damages based upon the cost and nature of innovation. *See generally* Benjamin N. Roin, *The Case for Tailoring Patent Awards Based on Time-to-Market*, 61 UCLA L. REV. 672 (2014) (asserting that the measure of patent damages should be based upon how long it takes to bring a product to the market).

research and development costs is threefold. First, this measure is predictable considering innovation costs can often be deduced from public information. Second, if the holder had expended an extraordinary amount innovating a good, then third parties may find it wiser to design around the technology, avoiding infringement in the first place. Third, measuring damages based on the cost of innovation would also guarantee that each holder would accrue revenue in excess of their innovative efforts, promoting further research and development. The court or jury could then tack on a "reasonable premium," a level not meant to enrich the holder, but to reasonably reward the holder for successfully engineering a product. The test used by a jury would seek to find the lowest dollar amount that would have likely caused the patentee to have innovated the product anyway. A non–exhaustive list of factors for a jury to consider would be the cost of production, the number of other participants in the market, the profit margins available based upon the competitiveness of the industry, the attempts by the rights holder to actually market the protected item, and the good's commercial success or popularity. This would create a system that better promotes innovation while also allowing efficiency and competition concerns to inform the nature of intellectual property remedies.[311]

As for copyright damages, this is an easier fix. The only copyright remedy that should be retained is restoring the copyright holder's lost profits. Not only would this reform dispatch of statutory damages, but it would also eliminate disgorging the infringer of her profits. Under the current system, awarding the copyright owner the infringer's profits eliminates almost any economic incentive to infringe, despite the act's potential to enhance markets and creativity. Limiting damages to only lost profits would promote the arts by offering authors and artists monopoly profits while simultaneously providing economic incentives for pirates to engage in socially beneficial acts of infringement. With these reforms, the patent and copyright systems could more faithfully achieve their constitutional mandates while also revitalizing markets weighed down by intellectual property law's deadweight loss.

VII. CONCLUSION

The foregoing analysis attempts to put piracy into a new light. Because transactions involving infringing goods are typically viewed negatively, the law penalizes certain acts of infringement with monetary penalties that

311. *See generally* Balganesh, *supra* note 109, at 657–60 (discussing the law's movement toward recognizing "efficient infringements"); *see also* Turner, *supra* note 47 (advocating that patent law should incorporate efficiency mechanisms).

exceed the actual damages and criminal sanctions. This Article endeavors to reimagine infringement in a non–normative fashion, suggesting that society may benefit from an aggregate level of piracy.

Piracy functions akin to most other market behaviors. The decision whether to infringe is rational, meaning that pirates are likely to only copy protected goods when the benefits outweigh the costs. In most scenarios, the costs of either producing or consuming a pirated good outpaces any benefits, making it unlikely that its black market will emerge. The primary situation when infringement becomes likely is when the licit producer charges such an above market premium that a pirate could generate a profit even when paying damages to the holder. The point is that the goods most likely to suffer from piracy are those a holder sells for significantly above its marginal cost of production.

The manner in which a licit producer must respond to its black–market competitor is just as important. Considering that the law has shown an inability to eliminate infringement, holders must often lower prices to a more competitive level or shed other anticompetitive behaviors in order to redirect commerce away from illegal markets. This is substantially important because its effect, in the aggregate, increases efficiency. So, when considering the likely emergence or even the threat of piracy, intellectual property laws could generate more innovation with less deadweight loss if there were reforms to embrace piracy's procompetitive effects.

TOWARD A FEDERAL JURISPRUDENCE OF TRADE SECRET LAW

Sharon K. Sandeen[†] *& Christopher B. Seaman*[††]

ABSTRACT

The May 2016 enactment of the Defend Trade Secrets Act of 2016 (DTSA), which created a new federal civil cause of action for trade secret misappropriation, raises a host of issues that federal courts will have to consider under their original subject matter jurisdiction, rather than applying state law through the courts' diversity jurisdiction. This means that for the first time, an extensive body of federal jurisprudence will be developed to govern the civil protection and enforcement of trade secrets in the United States. In addition, due to the DTSA's changes to the existing federal criminal law governing trade secrets, the Economic Espionage Act of 1996 (EEA), federal courts will be required to further develop their EEA jurisprudence.

Because the DTSA is modeled after and includes many provisions taken directly from the Uniform Trade Secrets Act (UTSA), it is widely anticipated that federal courts will consult and rely upon existing case law regarding the UTSA to decide how to apply the DTSA. However, nothing in the DTSA's language mandates such an approach, and federal courts may elect to depart from state law precedent in some situations. Moreover, there are unique aspects of the DTSA, such as the ex parte seizure provision and protection for whistleblowers, which will raise questions of first impression for the federal courts. Additionally, because preexisting provisions of the EEA will be subject to greater scrutiny due to the number of civil cases that are likely to be filed under the DTSA, unresolved issues under the EEA are also likely to be extensively litigated.

While it is premature to catalogue all the issues that litigants may raise in trade secret cases brought under the DTSA, this Article seeks to identify and analyze several major areas of anticipated dispute and to provide a framework for resolving them. Part I begins with a brief introduction to U.S. trade secret law. Part II details the origins and legislative history of the DTSA. Part III discusses the interpretive rules and methodologies that are likely to govern federal courts' development of a federal jurisprudence of trade secrecy, including the circumstances under which they might rely upon existing state trade secret

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case law or instead develop a "federal common law" of trade secrecy. Finally, Part IV examines how key provisions of the DTSA should be interpreted in light of these rules and methodologies, organized into four subcategories: (1) "new" language in the DTSA that does not appear in state trade secret laws; (2) language "borrowed" from the UTSA that is defined by statute; (3) language "borrowed" from the UTSA that is not defined by statute; and (4) issues not clearly addressed in either the DTSA or the UTSA. In doing so, this Article provides a framework for future analysis of other provisions in the DTSA.

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I. INTRODUCTION AND BACKGROUND

In the annals of trade secret law, 2016 will either be seen as the year that trade secrecy came of age and was recognized as a form of intellectual property[1] protection on par with patent, copyright, and trademark law; an unfortunate disruption and complication of trade secret jurisprudence; or

1. Internationally, the labeling of trade secrets as "intellectual property" is controversial because of the right to exclude that typically flows from intellectual property rights and the reluctance to create another form of exclusive rights. *See* Sharon K. Sandeen, *The Limits of Trade Secret Law: Article 39 of the TRIPS Agreement and the Uniform Trade Secrets Act on Which It Is Based*, *in* THE LAW AND THEORY OF TRADE SECRECY: A HANDBOOK OF CONTEMPORARY RESEARCH (Rochelle C. Dreyfuss & Katherine J. Strandburg eds., 2011). This may explain, in part, why the DTSA contains a provision that states that trade secrets shall not be considered "intellectual property" for any other purpose of federal law. *See* Defend Trade Secrets Act, Pub. L. No. 114-153, § 2(g), 130 Stat. 376, 382 (2016); *see also* Eric Goldman, *The Defend Trade Secrets Act Isn't an "Intellectual Property" Law*, 33 SANTA CLARA HIGH TECH. L.J. 541, 542 (2017) (explaining that while this language "preserves the status quo" for website immunity from liability for third–party content under Section 230 of the Communications Decency Act, it also "potentially affects hundreds of other statutes").

something in between. With the adoption of the Defend Trade Secrets Act of 2016 (DTSA) by the U.S. Congress[2] and the EU Trade Secret Directive by the European Parliament and the Council of the European Union,[3] which story is ultimately told will depend in significant part on how both pieces of legislation are interpreted and applied by courts. Although proponents of both laws argue they will create greater uniformity regarding trade secret principles, it will take years of judicial decision–making (and in the EU, statutory enactments by Member states as well) before we will know whether that claim is fulfilled.

The May 11, 2016 enactment of the DTSA created a federal civil cause of action for trade secret misappropriation for the first time. For over 175 years, state law governed civil trade secret principles in the United States, first as common law (as expressed in the Restatement (First) of Torts), and since 1979, principally through the Uniform Trade Secrets Act (the UTSA).[4] The UTSA is one of the most widely–adopted uniform laws, having been enacted into law by forty–seven states, Puerto Rico, and the U.S. Virgin Islands.[5] While many assume that the principles governing trade secrecy articulated in the UTSA (and in non–UTSA states, the Restatements) will continue to apply to the DTSA, this is not a foregone conclusion for the simple reason that federal courts are not bound to interpret the DTSA in accordance with the UTSA.[6] Rather, courts will likely look first to the language of the DTSA and Congress's intent in enacting it.

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2. Pub. L. No. 114-153, 130 Stat. 376 (2016).

3. Council Directive 2016/943, 2016 O.J. (L 157) 1 (EU).

4. For a comprehensive history of trade secret law in the United States, see Sharon K. Sandeen, *The Evolution of Trade Secret Law and Why Courts Commit Error When They Do Not Follow the Uniform Trade Secrets Act,* 33 HAMLINE L. REV. 493 (2010).

5. UNIF. TRADE SECRETS ACT (amended 1985), 14 U.L.A. 536–659 (2005) [hereinafter UTSA]. The only states not to adopt the UTSA are New York, Massachusetts, and North Carolina, although North Carolina has a statute that is very similar to the UTSA. *See* N.C. GEN. STAT. §§ 66-152 to 66-157 (1981). The most recent two states to adopt the UTSA were New Jersey in 2012 and Texas in 2013. N.J. STAT. ANN. § 56:15-1 (West 2012); TEX. CIV. PRAC. & REM. CODE ANN. § 134A.001 (West 2013).

6. In her testimony before the U.S. Senate Judiciary Committee in December 2015, Sharon Sandeen suggested that the DTSA should be amended to include a provision requiring that the DTSA be applied and interpreted in accordance with the commentary of the UTSA, but no such amendment was made. *Protecting Trade Secrets: The Impact of Trade Secret Theft on American Competitiveness and Potential Solutions to Remedy This Harm*: *Hearing on S. 1890 and H.R. 3326 Before the Full S. Comm. on the Judiciary*, 114th Cong. (2015) (statement of Sharon Sandeen, Professor of Law, Hamline University School of Law), https://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Sandeen%20Testimony.pdf. However, a small portion of the commentary with respect to reverse engineering and independent development is included in the text of the DTSA. *See* 18 U.S.C. § 1839(6) (Supp. IV 2016).

Next, courts will likely examine and apply a hierarchy of other sources to both interpret the DTSA and fill its gaps. Whether these "other sources" include the UTSA, its commentary, and state court decisions applying them remains to be seen.

This Article analyzes the process federal courts will engage in to create, for the first time, a federal jurisprudence of civil trade secret law. Because the background and history of the DTSA's enactment are integral to its interpretation and application, Part II begins with a legislative history of the DTSA. Part III discusses the rules and methodologies that federal courts are likely to employ to interpret and apply the DTSA. Because the DTSA does not expressly address all issues that are likely to arise in trade secret cases, federal courts will be required to fill gaps in the statute by either relying upon existing state law or by creating so–called "federal common law." How this is done is a complicated part of federal jurisprudence that, in some cases, may lead federal courts to refer to the UTSA or to develop new approaches to various issues. Finally, Part IV discusses some of the DTSA's key provisions and analyzes how these interpretative rules and methodologies should apply to each of them.

II. THE CREATION OF A FEDERAL CIVIL CAUSE OF ACTION FOR TRADE SECRET MISAPPROPRIATION

This Part describes the circumstances that led to the creation of a federal civil cause of action for trade secret misappropriation. Because Professor Sandeen previously wrote a detailed account of the background and history of U.S. trade secret law,[7] this Part only briefly recounts that history with an emphasis on the Supreme Court's landmark decision in *Kewanee Oil*, which held that federal patent law did not preempt state–based protection for trade secrets. Next, this Part covers the enactment of the Economic Espionage Act (EEA) of 1996, which provided for federal criminal (but not civil) liability for certain forms of trade secret misappropriation. Finally, it examines the legislative history of the Defend Trade Secrets Act of 2016, including significant changes to the legislation as it made its way through Congress and the perspectives of both its proponents and opponents.

7. *See generally* Sandeen, *supra* note 4; *see also* Sharon K. Sandeen, *Relative Privacy: What Privacy Advocates Can Learn from Trade Secret Law*, 2006 MICH. ST. L. REV. 667, 673–76, 681–87 (2006) (discussing the common law development of trade secret law in the United States).

A. STATE LAW ORIGINS

Until the DTSA's passage, state law nearly exclusively governed trade secrecy in the United States.[8] The common law of trade secrecy (or breach of confidence law as it is known in the U.K.[9]) originated in England in the early 1800s as a way to protect against the disclosure of proprietary manufacturing knowledge in an era of mass industrialization.[10] The concept then migrated to the United States beginning in 1837 in a case involving a sale of a business and the failure of the seller/defendant to disclose his secret process for making chocolate.[11] In 1868, the same court found that the holder of a secret manufacturing process has a property interest "which a court of chancery will protect against one who in violation of contract and breach of confidence undertakes to apply it to his own use, or to disclose it to third persons."[12] In the following decades, numerous state courts granted relief for misappropriation of proprietary information based upon various common law theories.[13] Similarly, federal courts sitting in diversity prior to

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8. The principal exception was federal criminal law, most notably the Economic Espionage Act of 1996, which provides substantial criminal penalties for theft of trade secrets. *See* Pub. L. No. 104-294, 110 Stat. 3488 (1996) (codified as amended at 18 U.S.C. §§ 1831–39 (2012)). Some trade secret owners have used other federal laws, like the Computer Fraud and Abuse Act, 18 U.S.C. § 1030 (2012), and section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337 (2012), as a vehicle for asserting civil claims in federal court. None of these statutes, however, created a general private cause of action for trade secret misappropriation under federal law. *See* Christopher B. Seaman, *The Case Against Federalizing Trade Secrecy*, 101 VA. L. REV. 317, 334–38 (2015) (describing the limits of these statutes for bringing civil trade secret claims).

9. *See* TANYA APLIN ET AL., GURRY ON BREACH OF CONFIDENCE: THE PROTECTION OF CONFIDENTIAL INFORMATION § 3.03 (2d ed. 2012).

10. *See* RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 cmt. a (AM. LAW INST. 1995) ("The modern law of trade secrets evolved in England in the early 19th century, apparently in response to the growing accumulation of technical know-how and the increased mobility of employees during the industrial revolution."); *see also* Catherine L. Fisk, *Working Knowledge: Trade Secrets, Restrictive Covenants in Employment, and the Rise of Corporate Intellectual Property, 1800-1920*, 52 HASTINGS L.J. 441, 450–51 (2001) (describing the decline of the master–apprentice relationship in a pre–industrial economy as a method of confidentially transferring craft knowledge, and the associate rise of "a new set of rules," including trade secrecy, in response to this development). *Newbery v. James*, 35 Eng. Rep. 1011 (Ch. 1817), is commonly cited as the first reported trade secret case. MELVIN F. JAGER, TRADE SECRETS LAW § 2:2 (2016).

11. Vickery v. Welch, 36 Mass. 523 (1837).

12. Peabody v. Norfolk, 98 Mass. 452, 458 (1868).

13. *See* JAGER, *supra* note 10, § 2:2 (describing nineteenth and early–twentieth century trade secret decisions); *see also* RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 39 cmt. b (AM. LAW INST. 1995) ("Early trade secret cases, responding to requests for injunctive relief against breaches of confidence, frequently supported the exercise of equity

Erie Railroad Co. v. Tompkins[14] applied common law principles to protect against the unauthorized dissemination and use of trade secret information.[15]

The American Law Institute (ALI) undertook the first effort to synthesize trade secret law in the United States, as reflected in the Restatement (First) of Torts, published in 1939.[16] Although lacking the force of codified law, this Restatement was highly influential, operating as "the primary source for an understanding of the purpose and meaning of trade secret law" for at least fifty years.[17] Section 757 of the Restatement captured the common law principle that a party could be liable for disclosing or using another's trade secret in breach of a duty of confidence or following the discovery of the secret "by improper means." It also recognized that third parties to the original misappropriation could be liable if they learned the secret with notice of its secrecy and its misappropriation.[18] In addition, the comments to § 757 set forth the types of information eligible for protection[19] and the requirement that "the subject

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jurisdiction by describing the plaintiff's interest in the trade secret as a property right . . . .").

14. Erie R.R. Co. v. Tompkins, 304 U.S. 64 (1938).

15. *See, e.g.*, E.I. DuPont de Nemours Powder Co. v. Masland, 244 U.S. 100 (1917) (authorizing trial court to enter injunction to prevent against defendant's disclosure of alleged trade secret information); Shellmar Prods. Co. v. Allen-Qualley Co., 87 F.2d 104, 105–10 (7th Cir. 1936) (affirming entry of injunction prohibiting defendant from "making, using, or selling a certain type of wrap for food products such as candy bars, and from using, revealing, or making known the processes and machinery used in its manufacture").

16. RESTATEMENT (FIRST) OF TORTS § 757–58 (AM. LAW INST. 1939).

17. *See* Sandeen, *supra* note 4, at 502; *see also* ELIZABETH A. ROWE & SHARON K. SANDEEN, CASES AND MATERIALS ON TRADE SECRET LAW 27 (2d ed. 2017); Ramon A. Klitzke, *The Uniform Trade Secrets Act*, 64 MARQ. L. REV. 277, 282 (1980) (explaining that the Restatement's "principles became primary authority by adoption in virtually every reported case").

18. RESTATEMENT (FIRST) OF TORTS § 757 (AM. LAW INST. 1939); *see also* Arthur L. Goodhart, *Restatement of the Law of Torts, Volume IV: A Comparison Between American and English Law*, 91 U. PA. L. REV. 487, 488 (1943) ("Section 757 deals with liability for disclosure or use of another's trade secret. It provides that a person is liable not only where he breaks a contract of secrecy or induces another to break such a contract, but also where he knows that the secret is being disclosed to him improperly or by mistake and he takes advantage of it."). Section 758 of the Restatement further provided that an unwitting recipient of trade secret information without knowledge of its status would not be liable for misappropriation. RESTATEMENT (FIRST) OF TORTS § 758 (AM. LAW INST. 1939).

19. *See* RESTATEMENT (FIRST) OF TORTS § 757 cmt. b (AM. LAW INST. 1939) ("A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it.").

matter of a trade secret must be secret . . . so that, except by the use of improper means, there would be difficulty in acquiring the information."[20] It also sanctioned a wide range of remedies for misappropriation, including injunctive relief, damages for past harm, and disgorgement of defendant's profits.[21] Significantly, however, the common law of trade secrecy as expressed by the Restatement (First) of Torts did not apply to trade secrets that were not in commercial use.[22]

B. THE *ERIE*/*SEARS*/*COMPCO* SQUEEZE

About the same time as the Restatement's publication, the U.S. Supreme Court's landmark decision in *Erie* effectively eliminated the possibility of a non–statutory federal law of trade secrecy.[23] *Erie* famously declared that "there is no federal general common law."[24] Rather, *Erie* and its progeny generally require federal courts to apply the substantive law of the state where the court sits (including choice of law rules), unless the Constitution, a federal statute, or an applicable Federal Rule of Civil Procedure governs the issue.[25]

Concerns about uniformity between state and federal courts motivated the *Erie* Court to reject its previous rule in *Swift v. Tyson*,[26] which held that federal courts sitting in diversity were not required to apply state common law and could exercise "an independent judgment as to what the common

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20. *Id.* This comment also listed six factors for determining whether the trade secret holder took sufficient precautions to keep the information secret. *See id.* ("Some factors to be considered in determining whether given information is one's trade secret are: (1) the extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and to his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.").

21. *Id.* cmt. e.

22. *Id.* § 757 (protecting information "used in one's business" and giving "an opportunity to obtain an advantage over competitors who did not know or use it").

23. *See* Sandeen, *supra* note 4, at 503 ("Because of *Erie*, the federal judiciary was out of the business of developing the common law except in connection with the interpretation and application of federal statutes.").

24. *Erie*, 304 U.S at 78.

25. *See id.* ("Except in matters governed by the Federal Constitution or by acts of Congress, the law to be applied in any case is the law of the state."); *see also* Federal Rules of Decision Act, 28 U.S.C. § 1652 (2012); Hanna v. Plumer, 380 U.S. 460, 465 (1965) ("[F]ederal courts sitting in diversity cases . . . are to apply state substantive law and federal procedural law.").

26. 41 U.S. 1 (1842).

law . . . is—or should be."[27] As Justice Brandeis explained, *Swift* "introduced grave discrimination by noncitizens against citizens" by making "rights enjoyed under the unwritten 'general law' vary according to whether enforcement was sought in the state or in the federal court."[28] Thus, "[i]n attempting to promote uniformity of law throughout the United States, the [*Swift*] doctrine had prevented uniformity in the administration of the law."[29] Subsequent decisions have reiterated that a principal objective of the *Erie* doctrine is to promote uniformity in the application of substantive law to the extent feasible under our federalist system,[30] but uniformity as between the state and federal courts of a state ("*Erie* uniformity"), rather than uniformity among federal courts.[31]

While *Erie* foreclosed a federal common law of trade secrecy, two other Supreme Court decisions raised the question whether federal patent law preempted state protection of trade secrets. In a pair of decisions Justice Hugo Black wrote and issued on the same day in 1964, the Court in *Sears, Roebuck & Co. v. Stiffel Co.*[32] and *Compco Corp. v. Day-Brite Lightning, Inc*. (collectively *Sears*/*Compco*)[33] held that the Patent Act preempted Illinois's unfair competition law prohibiting product simulation.[34] In both cases, the defendants copied and sold an unpatented lighting fixture identical to those plaintiffs offered.[35] The trial court held both defendants

27. *Erie*, 304 U.S. at 71.

28. *Id.* at 74–75.

29. *Id.* at 75.

30. *See Hanna*, 380 U.S. at 474 (Harlan, J., concurring) ("*Erie* recognized that there should not be two conflicting systems of law controlling the primary activity of citizens, for such alternative governing authority must necessarily give rise to a debilitating uncertainty in the planning of everyday affairs.").

31. *See* Amanda Frost, *Overvaluing Uniformity*, 94 VA. L. REV. 1567, 1574–79 (2008) (discussing the asserted importance of the uniform interpretation of federal law); *see also* Sharon K. Sandeen, *The Myth of Uniformity in IP Law*, 51 GA. L. REV. (forthcoming 2018).

32. 376 U.S. 225 (1964).

33. 376 U.S. 234 (1964).

34. Product simulation is a claim of unfair competition based on "an unprivileged imitation of the physical appearance of another's goods." RESTATEMENT (SECOND) OF TORTS § 741 (AM. LAW INST. 1977); *see also* Note, *Protection for the Artistic Aspects of Articles of Utility*, 72 HARV. L. REV. 1520, 1527 (1959) (explaining that before *Sears*/*Compco*, "[t]he originator of a design may, in the unusual case, be able to secure protection against copying by resort to the state law of unfair competition").

35. In *Sears*, the plaintiff (Stiffel) had obtained design and utility patents covering its product, but the district court held these patents "invalid for want of invention" (i.e., obviousness). *Sears*, 376 U.S. at 226. In *Compco*, the plaintiff (Day-Brite) obtained design patent for its fixture, which the district court rejected as invalid. *Compco*, 376 U.S. at 235.

liable for unfair competition, finding the similarity of their products to the plaintiffs' products would likely confuse customers.[36] The U.S. Supreme Court unanimously reversed in both cases, holding that Illinois law could not impose liability for the copying of an unpatented good because it would conflict with the Patent Act's policy of granting protection "only for true inventions, and then only for a limited time."[37] Using expansive language, and based upon concerns about federal uniformity, the Court suggested that *any* state laws granting protection for inventions that failed to satisfy the Patent Act's rigorous requirements would inevitably clash with federal law and thus would be invalid under the Supremacy Clause.[38]

The reasoning of *Sears*/*Compco* gave rise to speculation that a conflict between state law and federal patent policy might be found whenever state law sought to restrict the use of unpatented ideas, including those held as trade secrets.[39] Indeed, the combined effect of *Erie* and *Sears*/*Compco*—which Professor Sandeen previously labeled the *Erie*/*Sears*/*Compco* squeeze[40]—created a vacuum in federal law as *Erie* swept aside the federal law of unfair competition that had developed before 1938, while *Sears/Compco* limited the ability of states to adopt their own principles of unfair competition. This led the New York City Bar Association and other attorneys and organizations to call for federal legislation to address the uncertainty regarding state unfair competition law, of which trade secrecy is a part.[41] Beginning even before the Court's decisions in *Sears/Compco*,

36. *Sears*, 376 U.S. at 226; *Compco*, 376 U.S. at 235.

37. *Sears*, 376 U.S. at 232–33.

38. *See id.* at 230–32 (stating that under the federal patent laws, "the prerequisites to obtaining a patent are strictly observed" and "uniform federal standards are carefully used to promote innovation," and "allow[ing] a State by use of its law of unfair competition to prevent the copying of an article which represents too slight an advance to be patented would be to permit the State to block off from the public something which federal law has said belongs to the public").

39. *See, e.g.*, Martin J. Adelman, *Trade Secrets and Federal Pre-emption—The Aftermath of* Sears *and* Compco, 49 J. PATENT OFF. SOC'Y 713, 731 (1967); Gordon L. Doerfer, *The Limits on Trade Secret Law Imposed by Federal Patent and Antitrust Supremacy*, 80 HARV. L. REV. 1432 (1967); James M. Treece, *Patent Policy and Preempti*on: *The* Stiffel *and* Compco *Cases*, 32 U. CHI. L. REV. 80 (1964); Note, *Patent Preemption of Trade Secret Protection of Inventions Meeting Judicial Standards of Patentability*, 87 HARV. L. REV. 807 (1974); Comment, *The* Stiffel *Doctrine and the Law of Trade Secrets*, 62 NW. U. L. REV. 956 (1968); Note, *Trade Secrets Law After* Sears *and* Compco, 53 VA. L. REV. 356 (1967).

40. Sandeen, *supra* note 4, at 507.

41. *Id.* at 504–05; s*ee also* John R. Peterson, *The Legislative Mandate of* Sears *and* Compco*: A Plea for a Federal Law of Unfair Competition*, 69 DICK. L. REV. 347, 348–49 (1965) (asserting that the "controversy and confusion as to the meaning of the Court's

New York Congressman John V. Lindsay repeatedly introduced legislation to create a federal statute for unfair competition, including trade secrecy in some versions, which would supplement the Lanham Act.[42] Ultimately, this issue was resolved with the Court's decision in *Kewanee Oil Co. v. Bicron Corp.*[43] and the subsequent adoption of the Uniform Trade Secrets Act (UTSA).

C. *KEWANEE* AND THE UNIFORM TRADE SECRETS ACT

The *Kewanee* case brought patent law's potential preemption of state trade secret law to the forefront.[44] Although it was not the first federal court to find at least some aspects of state law regarding confidential information preempted by the Patent Act,[45] the Sixth Circuit's opinion in *Kewanee*[46] teed the issue up for the Supreme Court to review.[47] In an opinion that carefully considered different types of inventions and whether they might be eligible for patent protection, the Court held that although the Constitution granted Congress the power to legislate in the area of intellectual property[48] this did not prohibit states from also adopting laws and policies designed to promote innovation.[49] Rather, "the only limitation on the states is that in regulating the areas of patents and copyrights they do not conflict with the operation of the laws in this area passed by

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decisions" in *Sears* and *Compco* "illustrate the necessity for clarifying legislation," and contending that unfair competition law "should be written into federal legislation"); Note, *Misrepresentation and the Lindsay Bill: A Stab at Uniformity in the Law of Unfair Competition*, 70 YALE L.J. 406 (1961) (discussing the initial Lindsay Bill).

42. *See* H.R. 7833, 86th Cong. (1959); H.R. 10038, 87th Cong. (1962); H.R. 4651, 88th Cong. (1963); *see also* Sandeen, *supra* note 4, at 505–06 (discussing the Lindsay Bill).

43. 416 U.S. 470 (1974).

44. For a detailed history of the lead–up to and aftermath of *Kewanee*, see Sharon K. Sandeen, Kewanee *Revisited: Returning to First Principles of Intellectual Property Law to Determine the Issue of Federal Preemption*, 12 MARQ. INTELL. PROP. L. REV. 299 (2008).

45. *See* Painton & Co. v. Bourns, Inc., 309 F. Supp. 271 (S.D.N.Y. 1970) (refusing to enforce the trade secret provision of a manufacturing agreement, finding a conflict with patent policy), *rev'd*, 442 F.2d 216 (2d Cir. 1971).

46. *See* Kewanee Oil Co. v. Bicron Corp., 478 F.2d 1074, 1087 (6th Cir. 1973) ("[T]he field of protection afforded to this plaintiff by that Trade Secret Law has been preempted by the Patent Laws of the United States."), *rev'd*, 416 U.S. 470 (1975).

47. *See, e.g.*, Dekar Indus. v. Bissett-Berman Corp., 434 F.2d 1304 (9th Cir. 1970); Water Servs., Inc. v. Tesco Chems., Inc., 410 F.2d 163 (5th Cir. 1969); Servo Corp. of Am. v. Gen. Elec. Co. 337 F.2d 716 (4th Cir. 1964).

48. U.S. CONST. art. I, § 8, cl. 8.

49. *Kewanee*, 416 U.S. at 478–79; *cf.* Goldstein v. California, 412 U.S. 546, 560 (1973) (holding that U.S. copyright law did not preempt a state law protecting pre–1972 sound recordings).

Congress."[50] The Court first concluded there was clearly no preemption for trade secret information that was not patentable[51]—for example, trade secrets that fell outside the scope of patentable subject matter,[52] or that were merely obvious or trivial improvements over the existing state–of–the–art.[53] For this category of information, "the holder . . . would have no reason to apply for a patent whether trade secret protection existed or not," and "[a]bolition of trade secret protection would, therefore, not result in increased disclosure to the public."[54] The more difficult question, the Court conceded, involved trade secrets that were potentially patentable. For this category of information, the majority concluded that there was no preemption because trade secret law ultimately "provides far weaker protection in many respects than patent law"—for instance, it does not prohibit independent discovery or reverse engineering of the secret, and protection can be lost if the secret is disclosed or becomes widely known.[55] As a result, the Court concluded there was no conflict between U.S. patent law and Ohio's trade secret law because inventors of patent–eligible inventions would generally opt for patent protection (and disclosure) rather than secrecy.[56]

After the Court's decision in *Kewanee*, the American Bar Association (ABA) and the National Conference of Commissioners on Uniform State Laws (NCCUSL, now known as the Uniform Law Commission) resumed a previously stalled effort to create a model statute that would help harmonize state trade secret law.[57] This culminated in the UTSA, promulgated in 1979 and amended in 1985.[58] Among other goals, the UTSA's drafters sought to create "unitary definitions of trade secret and trade secret misappropriation,"[59] as well as to codify basic principles that had been developed through case law,[60] thereby representing "the first major attempt to legislate trade secret misappropriation[,] rather than to leave it in the

50. *Kewanee*, 416 U.S. at 479.
51. *Id.* at 483–84.
52. 35 U.S.C. § 101 (2012).
53. *Id.* § 103.
54. *Kewanee*, 416 U.S. at 483.
55. *Id.* at 489–90.
56. *Id.* at 490–91.
57. *See* Sandeen, *supra* note 4, at 512–15, 517–20.
58. UTSA, Prefatory Note.
59. *Id.*
60. Klitzke, *supra* note 17, at 284; *see also* Christopher Rebel J. Pace, *The Case for a Federal Trade Secrets Act*, 8 HARV. J.L. & TECH. 427, 432–33 (1995).

hands of the courts."[61] The UTSA has been enormously influential in modern trade secret law, having been adopted by forty–seven states since its promulgation.[62]

D. ECONOMIC ESPIONAGE ACT (EEA) OF 1996

Congress's first meaningful foray into the realm of trade secrecy occurred with the enactment of the Economic Espionage Act (EEA) of 1996.[63] Prior to the EEA, there was no federal civil or criminal law directed specifically at trade secret misappropriation by private actors.[64] But in the wake of claims of widespread espionage by foreign actors against domestic industry (a theme later revisited with the DTSA), Congress provided for criminal penalties for two forms of trade secret theft: (1) espionage on behalf of a foreign entity[65] and (2) theft of trade secrets for pecuniary gain.[66] These provisions define "misappropriation" essentially identically, imposing liability on any individual or entity that:

> (1) steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains a trade secret;
>
> (2) without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys a trade secret; [or]

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61. Pace, *supra* note 60, at 433.

62. *Trade Secrets Act: Enactment Status Map*, UNIF. LAW COMM'N, http://www.uniformlaws.org/Act.aspx?title=Trade%20Secrets%20Act (last visited Dec. 22, 2017). New York and Massachusetts are two states that still rely upon common law, not having adopted the UTSA or their own trade secret statute. *See* Seaman, *supra* note 8, at 353. North Carolina has adopted a statutory scheme of trade secret protection, but it differs so substantially from the UTSA that the Uniform Law Commission has declined to classify it as a UTSA jurisdiction. *See id.* at 329, 353 n.247.

63. Pub. L. No. 104-294, 110 Stat. 3488 (1996) (codified as amended at 18 U.S.C. §§ 1831–32 (2016)).

64. *See* S. REP. NO. 104-359, at 10 (1996) ("[N]o Federal law protects proprietary economic information from theft and misappropriation in a systematic, principled manner. As a result, prosecutors have had trouble shoe-horning economic espionage into these laws."); Ben Shiffman et al., *Intellectual Property Crimes*, 49 AM. CRIM. L. REV. 929, 932 (2012) ("[N]o federal criminal statute dealt directly with the theft of commercial trade secrets until . . . 1996."). While an older federal statute, 18 U.S.C. § 1905 (2012), makes it a misdemeanor offense for federal officials and employees to publicly disclose trade secret information learned during their official duties, this law does not apply to private actors.

65. 18 U.S.C. § 1831(a) (Supp. IV 2016).

66. *Id.* § 1832(a).

> (3) receives, buys, or possesses a trade secret, knowing the same to have been stolen or appropriated, obtained, or converted without authorization[.][67]

The EEA also prohibits attempts and conspiracies to commit misappropriation[68] and applies to extraterritorial conduct by U.S. citizens or entities, as well as noncitizens, if "an act in furtherance of the offense was committed in the United States."[69]

Despite increasing enforcement in recent years, the EEA has not been widely utilized by federal prosecutors. According to a 2012 study, the federal government had filed 124 total criminal cases under the EEA, an average of less than eight indictments per year.[70] The paucity of enforcement actions caused commentators to call the EEA a "disappointment"[71] and conclude that it is "not acting as a deterrent against theft of trade secrets."[72] It also provided a justification for the DTSA's enactment.

E. DEFEND TRADE SECRETS ACT OF 2016

During consideration of the EEA, members of Congress contemplated adding a civil cause of action to the bill, but ultimately declined to do so.[73] As a result, trade secret holders continued to bring misappropriation claims under state law, and the volume of trade secret litigation significantly

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67. *Id.* § 1831(a)(1)–(3); *id.* § 1832(a)(1)–(3) (containing the same definition with the exception of replacing each instance of "a trade secret" with the phrase "such information").

68. *Id.* §§ 1831(a)(4)–(5); *id.* § 1832(a)(4)–(5).

69. *Id.* § 1837.

70. Peter J. Toren, *An Analysis of Economic Espionage Act Prosecutions: What Companies Can Learn from It and What the Government Should Be Doing About It!*, 84 PAT. TRADEMARK & COPYRIGHT J. 884, 885 (2012); *see also Criminal Law—Economic Espionage—Ninth Circuit Upholds First Trial Conviction Under § 1831 of the Economic Espionage Act of 1996*—United States v. Chung*, 659 F.3d 815 (9th Cir. 2011)*, 125 HARV. L. REV. 2177, 2177 (2012) [hereinafter *EEA Note*] ("[S]urprisingly few cases have been prosecuted under the [EEA].") (footnote omitted).

71. Chris Carr et al., *The Economic Espionage Act: Bear Trap or Mousetrap?*, 8 TEX. INTELL. PROP. L.J. 159, 199 (2000).

72. Toren, *supra* note 70, at 886; *see also EEA Note*, *supra* note 70, at 2181 ("[F]ederal prosecutors have taken a markedly tentative approach toward prosecuting § 1831 offenses.").

73. *See* 142 CONG. REC. 27111–12 (1996) (statement of Sen. Arlen Specter) (explaining that "[a]doption of [the EEA] will not be a panacea, but it is a start," and recognizing that "available civil remedies may not be adequate to the task" of protecting trade secrets and "that a Federal civil cause of action is needed").

increased in the 1990s and 2000s.[74] In the wake of several high–profile incidents of economic espionage,[75] as well as reports of widespread trade secret theft by foreign entities allegedly costing American businesses billions of dollars in losses,[76] members of Congress revisited the idea of a civil cause of action for trade secret misappropriation. This Section details the history of the DTSA, including the arguments in favor of the bill, the arguments of its opponents, and changes to the legislation as it made its way through Congress.[77]

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74. *See* David S. Almeling et. al., *A Statistical Analysis of Trade Secret Litigation in Federal Courts*, 45 GONZ. L. REV. 291, 302 tbl.1 (2009) (showing that trade secret decisions in federal court went from averaging less than five per year before the late 1980s to over fifteen decisions per year by the 2000s); *cf.* David S. Almeling et al., *A Statistical Analysis of Trade Secret Litigation in State Courts*, 46 GONZ. L. REV. 57 (2011) (showing a more modest increase in trade secrets decisions in state court over this time).

75. *See, e.g.*, Michael S. Schmidt & David E. Sanger, *5 in China Army Face U.S. Charges of Cyberattacks*, N.Y. TIMES (May 19, 2014), https://www.nytimes.com/2014/05/20/us/us-to-charge-chinese-workers-with-cyberspying.html (reporting criminal charges under the EEA against members of People's Liberation Army Unit 61398, which allegedly invaded the computer networks of several major American corporations, including Westinghouse, Alcoa and U.S. Steel, for the purpose of stealing trade secret information); E.I. DuPont de Nemours & Co. v. Kolon Indus., Inc., 564 Fed. App'x 710 (4th Cir. 2014) (per curiam); Bill Donahue, *Kolon Pleads Guilty to DuPont Trade Secrets Theft*, LAW360 (Apr. 30, 2015, 5:44 PM), https://www.law360.com/articles/650192/kolon-pleads-guilty-to-dupont-trade-secrets-theft (explaining that the jury awarded DuPont over $900 million for Kolon's alleged theft of trade secrets related to Kevlar bulletproof vests); Dan Levine, *U.S. Charges Chinese Man with Hacking into Boeing*, REUTERS (July 11, 2014, 6:20 PM), http://www.reuters.com/article/boeing-china-cybercrime/u-s-charges-chinese-man-with-hacking-into-boeing-idUSL2N0PM2FV20140711 (documenting Chinese national charged with theft of information related to military aircraft produced by Boeing).

76. COMM'N ON THE THEFT OF AM. INTELLECTUAL PROP., THE IP COMMISSION REPORT 1 (2013), http://ipcommission.org/report/IP_Commission_Report_052213.pdf ("The scale of international theft of American intellectual property (IP) is unprecedented—hundreds of billions of dollars per year . . . ."); OFFICE OF THE NAT'L COUNTERINTELLIGENCE EXEC., FOREIGN SPIES STEALING US ECONOMIC SECRETS IN CYBERSPACE: REPORT TO CONGRESS ON FOREIGN ECONOMIC COLLECTION AND INDUSTRIAL ESPIONAGE, 2009–2011 at 4 (2011), https://www.hsdl.org/?view&did=720057 ("Estimates from academic literature on the losses from economic espionage range . . . from $2 billion to $400 billion or more a year . . . ."); UNITED STATES INT'L TRADE COMM'N, CHINA: EFFECTS OF INTELLECTUAL PROPERTY INFRINGEMENT AND INDIGENOUS INNOVATION POLICIES ON THE U.S. ECONOMY xiv (2011), http://www.usitc.gov/publications/332/pub4226.pdf (estimating that in 2009, U.S. firms lost between $14.2 billion and $90.5 billion due to IP infringement in China).

77. In the interests of full disclosure, both authors publicly opposed the Defend Trade Secrets Act. *See infra* notes 117, 158–172 and accompanying text. Despite this, we have strived in this Article to present a fair account of both sides' arguments regarding the legislation.

1. *Legislative History of the DTSA*

The DTSA traces its origins to legislation first introduced in the 112th Congress (2011–2012). In 2011, newly–elected Senator Chris Coons of Delaware offered an amendment to a currency manipulation bill that would have amended the EEA to create a civil cause of action for trade secret misappropriation.[78] Senator Coons explained that his motivation was to provide greater trade secret protection to American businesses like DuPont—a major employer in Senator Coons' home state that had recently accused a Korean firm of misappropriating trade secrets for DuPont's next–generation Kevlar synthetic fiber.[79] The amendment would have followed the UTSA by authorizing both injunctive relief and monetary damages caused by the misappropriation,[80] as well as exemplary damages and attorney's fees for willful and malicious misappropriation up to the amount of actual damages awarded.[81] In addition, it would have permitted courts to order, on an ex parte basis, the seizure of "any property (including computers) used or intended to be used, in any manner or part, to commit or facilitate" trade secret misappropriation or to preserve evidence of such misappropriation.[82] And like the later–passed DTSA, the amendment would not have preempted existing state trade secret law.[83]

The following year, Senators Coons, Herb Kohl of Wisconsin, and Sheldon Whitehouse of Rhode Island introduced a standalone bill, the Protecting American Trade Secrets and Innovation Act of 2012, which was similar in numerous respects to Senator Coons' failed amendment.[84] Several of the differences are noteworthy, however, because they were eventually

78. S. Amend. 729, Currency Exchange Rate Oversight Reform Act of 2011, S. 1619, 112th Cong. (2011), *reprinted in* 157 CONG. REC. S6229–30 (daily ed. Oct. 5, 2011). Senator Herb Kohl of Wisconsin also sponsored this amendment.

79. 157 CONG. REC. S6175 (daily ed. Oct. 5, 2011) (statement of Sen. Coons). A jury awarded DuPont $919 million for the defendant's willful misappropriation. Verdict, E.I. DuPont de Nemours & Co. v. Kolon Indus., Inc., No. 3:09-CV-58, 2011 WL 4445717, (E.D. Va. Sept. 14, 2011).

80. S. Amend. 729, Currency Exchange Rate Oversight Reform Act of 2011, S. 1619, 112th Cong. (2011), *reprinted in* 157 CONG. REC. S6229–S6230 (daily ed. Oct. 5, 2011) (to be codified at 18 U.S.C. §§ 1836(a)(2), 1836(b)(4)(A)–(B)) (authorizing injunctive relief, damages for actual loss due to the misappropriation, and disgorgement of any unjust enrichment due to the misappropriation to the extent not considered in calculating actual damages).

81. *Id.*

82. *Id.*

83. *Id.*

84. S. 3389, 112th Cong. (2012).

incorporated into the DTSA. First, the bill modified the previously–proposed ex parte seizure provision by authorizing a party injured by a seizure order to bring a civil action against the plaintiff for damages, attorney's fees, and punitive damages if the seizure was sought in bad faith.[85] Second, it would have expressly incorporated the UTSA's definition of "misappropriation"[86] and defined "improper means" consistent with the UTSA's commentary by making clear that no liability would attach for reverse engineering or independent development of a trade secret.[87] However, it would have maintained the EEA's definition of a trade secret, which was arguably broader than the UTSA's definition in some respects.[88] Finally, the bill included a jurisdictional requirement, requiring "misappropriation of a trade secret that is related to or included in a product for or placed in interstate or foreign commerce."[89] This bill expired without a hearing or committee vote.

In the 113th Congress (2013–2014), more headway was made toward enacting federal trade secret legislation, although again falling short. Subcommittees of both the Senate and House Judiciary Committees held hearings on the issue of trade secret theft and possible solutions where numerous witnesses advocated for a federal civil remedy.[90] Thereafter,

85. *Id.* § 2(a).

86. *Compare id.* § 2(b), *with* UTSA § 1(2).

87. *Compare* S. 3389, 112th Cong. § 2(b) (2012) ("[T]he term 'improper means' . . . does not include reverse engineering or independent derivation."), *with* UTSA § 1 cmt (explaining that "[p]roper means include" "[d]iscovery by reverse engineering" and "independent invention"). Trade secret litigator Russell Beck has argued that the EEA's use of the term "independent *derivation*" rather than "independent *invention*" (as in the UTSA) suggests that the former might be broader by permitting a misappropriator to "cleanse his or her conduct by modifying a trade secret . . . [and] then using only the modified secret." Russell Beck, *Defend Trade Secrets Act and What It Means*, FAIR COMPETITION L. (May 11, 2016), https://faircompetitionlaw.com/2016/05/11/defend-trade-secrets-act-and-what-it-means/. To the best of the authors' knowledge, however, no court has adopted this distinction. *Cf.* Pioneer Hi-Bred Int'l v. Holden Found. Seeds, Inc., 35 F.3d 1226, 1240 (8th Cir. 1994) ("Proof of derivation removes the possibility of independent development . . . .").

88. *See* Seaman, *supra* note 8, at 361–62; *see also* Peter J. Toren, *Five Things to Know About the Defend Trade Secrets Act*, IPWATCHDOG (May 11, 2016), http://www.ipwatchdog.com/2016/05/11/five-things-know-defend-trade-secrets-act/id=68954/.

89. S. 3389, 112th Cong. § 2(a) (2012).

90. *See generally Economic Espionage and Trade Secret Theft: Are Our Laws Adequate for Today's Threats?: Hearing Before the Subcomm. on Crime & Terrorism of the S. Comm. on the Judiciary*, 113th Cong. (2014), https://www.judiciary.senate.gov/meetings/economic-espionage-and-trade-secret-theft-are-our-laws-adequate-for-todays-threats; *Trade Secrets: Promoting and Protecting American Innovation, Competitiveness*

several bills were introduced in both the House and Senate to amend the EEA to create a private cause of action.[91] The most notable of these proposals were the Defend Trade Secrets Act of 2014, sponsored by Senators Coons and Orrin Hatch of Utah,[92] and the Trade Secrets Protection Act of 2014, which was introduced by a bipartisan group of members of the House Judiciary Committee.[93] The Defend Trade Secrets Act of 2014 was patterned after Senator Coons' prior proposals with a few modifications, such as: modifying the ex parte seizure provision to more closely follow a similar provision in the federal Lanham Act governing seizures of goods bearing counterfeit marks;[94] increasing the ceiling on the amount of exemplary damages;[95] and extending the statute of limitations period to five years.[96] The Trade Secrets Protection Act was similar to prior proposals as well, except that it provided some additional limitations to protect against potential abuse of the ex parte seizure remedy, such as requiring the applicant to demonstrate both immediate and irreparable harm if the seizure was not ordered.[97] Both bills failed to be adopted into law, although the Trade Secrets Protection Act was favorably reported out of committee in late 2014.[98]

The effort to create a federal civil remedy for trade secret misappropriation finally succeeded in the 114th Congress. In July 2015, many of the same lawmakers who sponsored previous proposals introduced identical bills in the House and Senate called the Defend Trade Secrets Act

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and Market Access in Foreign Markets: Hearing Before the Subcomm. on Courts, Intellectual Prop., & the Internet of the H. Comm. on the Judiciary, 113th Cong. 7–67 (2014), https://judiciary.house.gov/wp-content/uploads/2016/02/113-97-88436.pdf.

91. *See* Defend Trade Secrets Act of 2014, S. 2267, 113th Cong. (2014); Trade Secrets Protection Act of 2014, H.R. 5233, 113th Cong. (2014); Private Right of Action Against Theft of Trade Secrets Act of 2013, H.R. 2466, 113th Cong. (2013); Future of American Innovation and Research Act of 2013, S. 1770, 113th Cong. (2013); *see also* Seaman, *supra* note 8, at 340–48 (describing these bills in greater detail).

92. S. 2267, 113th Cong. (2014).

93. H.R. 5233, 113th Cong. (2014). The bill's initial sponsors were Representatives Steve Chabot (R–OH), Howard Coble (R–NC), John Conyers (D–MI), Suzan DelBene (D–WA), George Holding (R–NC), Hakeem Jeffries (D–NY), Jerrold Nadler (D–NY), and Cedric Richmond (D–LA).

94. S. 2267, 113th Cong. § 2(a) (2014).

95. *See id.* (authorizing a court to award exemplary damages of up to three times the amount of compensatory damages).

96. *Id.* § 2(a).

97. H.R. 5233, 113th Cong. § 2(a) (2014).

98. *See* H.R. REP. NO. 113-156 (2014).

of 2015.[99] The new legislation largely tracked the proposals introduced in the previous Congress. Among other things, the bills would modify the EEA to:

- permit the "owner of a trade secret" to "bring a civil action" if "the person is aggrieved by the misappropriation of a trade secret that is related to a product or service used in, or intended for use in, interstate or foreign commerce";[100]
- grant federal district courts original but not exclusive jurisdiction over such civil claims;[101]
- adopt the UTSA's definition of "misappropriation" and codify the UTSA's commentary that reverse engineering and independent invention were not "improper means";[102]
- authorize the "seizure of property necessary to prevent the propagation or dissemination of the trade secret that is the subject of the action" upon an ex parte application, subject to numerous requirements;[103]
- create a cause of action for a person damaged by a "wrongful or excessive seizure" order, and authorizing monetary damages, attorney's fees, and punitive damages in cases of bad faith;[104]
- authorize a court to award injunctive relief "to prevent any actual or threatened misappropriation on such terms as the court deems reasonable, provided the order does not prevent a person from accepting an offer of employment under conditions that avoid actual or threatened misappropriation;"[105]

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99. Defend Trade Secrets Act of 2016, S. 1890, 114th Cong. (2015); Defend Trade Secrets Act of 2015, H.R. 3326, 114th Cong. (2015). For convenience, the footnotes below cite only to the Senate's version of the DTSA as introduced.

100. H.R. 3326, 114th Cong. § 2(a) (2015). Note that the words "or service" were added in the wake of *United States v. Aleynikov*, 636 F.3d 71 (2d Cir. 2012). *See* Theft of Trade Secrets Clarification Act of 2012, S. 3642, 112th Cong. (2012) (amending 18 U.S.C. § 1832 (2012)).

101. H.R. 3326, 114th Cong. § 2(a) (2015).

102. *Id.* § 2(b).

103. *Id.* § 2(a).

104. *Id.*; *see also* 15 U.S.C. § 1116(d)(11) (2012) (describing the remedies for wrongful seizure under the Lanham Act, which were incorporated by reference into the DTSA).

105. H.R. 3326, 114th Cong. § 2(b) (2015). The DTSA also would permit courts to "requir[e] affirmative actions to be taken to protect the trade secret." *Id.* § 2(b).

- authorize a court to award monetary remedies similar to the UTSA, including "damages for actual loss caused by the misappropriation," "damages for unjust enrichment caused by the misappropriation that is not addressed in computing damages for actual loss," or as an alternative, "a reasonable royalty for the misappropriator's unauthorized disclosure or use of the trade secret";[106]
- authorize a court to award exemplary damages "in an amount not more than [three] times the amount of the [compensatory] damages awarded" if "the trade secret was willfully and maliciously misappropriated;"[107]
- grant reasonable attorney's fees to the prevailing party if (1) "a claim of . . . misappropriation is made in bad faith," (2) "a motion to terminate an injunction is made or opposed in bad faith," or (3) "the trade secret was willfully and maliciously misappropriated;"[108]
- impose a five–year statute of limitations period for bringing such claims, which would begin to run when the misappropriation was actually discovered "or by the exercise of reasonable diligence should have been discovered";[109] and
- reaffirm that the EEA/DTSA would not "preempt or displace any other remedies, whether civil or criminal. . . for the misappropriation of a trade secret" under federal, state, or local law.[110]

The legislation also included an uncodified "Sense of Congress" provision that, inter alia, stated that the EEA as amended should "appl[y] broadly to protect trade secrets from theft."[111] In addition, it would impose a new requirement on the Attorney General to make biannual reports to Congress on the scope of trade secret theft occurring abroad and recommendations about additional actions to reduce its impact on American businesses.[112] Finally, it provided the EEA and DTSA "shall not be

106. *Id.*
107. *Id.*
108. *Id.*
109. *Id.* § 2(d). The DTSA also provided that "a continuing misappropriation constitutes a single claim of misappropriation." *Id.*
110. 18 U.S.C. § 1838 (2012); *see also* H.R. 3326, 114th Cong. § 2(f) (2015).
111. H.R. 3326, 114th Cong. § 4 (2015). Unlike other provisions of the DTSA, section 4 was not designated for codification in the United States Code.
112. *Id.* § 3.

construed to be a law pertaining to intellectual property for purposes of any other Act of Congress."[113]

Action first proceeded in the Senate, where the Judiciary Committee held the first and only hearing on the legislation in December 2015.[114] At this hearing, witnesses from private industry and an experienced trade secret litigator expressed support, while Professor Sandeen spoke in opposition, presenting the law professors' position against the bill.[115] Witnesses in favor emphasized the desirability of a uniform national standard for trade secrets law, access to a federal forum for trade secret misappropriation claims, and the need for an ex parte seizure remedy in extraordinary cases.[116] Professor Sandeen argued that the DTSA would not directly address the problem of cyberespionage (cited by many supporters as a reason for the bill) and raised several concerns, including the potential abuse of DTSA litigation for anticompetitive purposes, the likely increase in attorney's fees to adjudicate trade secret claims in federal court, and how the federal courts might address the inevitable disclosure doctrine.[117] During the hearing, members of the Senate Judiciary Committee were generally supportive of the DTSA,[118] although several senators expressed concern about the impact and potential abuse of the ex parte seizure provision,[119] which had been criticized by some academics and practitioners.[120]

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113. *Id.* § 2(g).

114. *See generally Protecting Trade Secrets: The Impact of Trade Secret Theft on American Competitiveness and Potential Solutions to Remedy This Harm*: *Hearing on S. 1890 and H.R. 3326 Before the Full S. Comm. on the Judiciary*, 114th Cong. (2015), (statement of Sharon Sandeen, Professor of Law, Hamline University School of Law), https://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Sandeen%20Testimony.pdf.

115. *Id.*

116. *See id.* at 5 (statement of Thomas R. Beall, Vice President and Chief Intellectual Property Counsel, Corning Inc.), https://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Beall%20Testimony.pdf; *id.* at 4–5 (statement of Karen Cochran, Associate General Counsel and Chief Intellectual Property Counsel, E.I. du Pont de Nemours & Co.), https://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Cochran%20Testimony.pdf; *id.* at 7–8 (statement of James Pooley, Principal, James Pooley, PLC), http://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Pooley%20Testimony.pdf.

117. *Id.* at 1–7 (statement of Professor Sharon K. Sandeen).

118. *See generally id.* (statements of Sen. Hatch, Sen. Coons, Sen. Grassley), https://www.judiciary.senate.gov/meetings/protecting-trade-secrets-the-impact-of-trade-secret-theft-on-american-competitiveness-and-potential-solutions-to-remedy-this-harm.

119. *See generally id.* (questions of Sen. Whitehouse and Sen. Klobuchar).

120. *See generally* Eric Goldman, *Ex Parte Seizures and the Defend Trade Secrets Act*, 72 WASH. & LEE L. REV. ONLINE 28 (2015).

The following month, Senators Hatch and Coons offered a manager's amendment that made numerous changes to the DTSA, including addressing some provisions that the law professors found objectionable.[121] Specifically, the amendment provided that only the "owner" (as defined) of a trade secret could bring a civil claim,[122] reduced the statute of limitations period from five years to three years to follow the majority rule under state law,[123] and amended the definition of "trade secret" and "improper means" to be more consistent with the UTSA.[124] The amendment also lowered the amount of potential exemplary damages to twice (rather than triple) the amount of compensatory damages.[125] In addition, it added language providing that an ex parte seizure could be ordered only in "extraordinary circumstances"[126] and included further limitations on the scope and enforcement of such seizures.[127]

Another significant modification in the manager's amendment limited the scope of injunctive relief for departing employees. First, the bill was amended so that any injunction must "be based on evidence of threatened

121. S. 1890, 114th Cong. § 2(a) (2015) (as amended on Jan. 8, 2016).

122. *Id.* § 2(a)(1) (codified as amended at 18 U.S.C. § 1836(b)(1) (Supp. IV 2016)).

123. *Id.* § 2(d) (codified as amended at 18 U.S.C. § 1836(d) (Supp. IV 2016)); *see also* Seaman, *supra* note 8, at appendix B (showing that the majority of states have a three–year statute of limitations period).

124. Specifically, the amendment changed the EEA's existing definition of "trade secret" by striking the words "the public" from the requirement that a trade secret is "not . . . generally known to, and not readily ascertainable through proper means by, the public" and inserting "another person who can obtain economic value from the disclosure or use of the information." S. 1890, 114th Cong. § 2(b) (2015) (codified as amended at 18 U.S.C. § 1839(3)(B) (Supp. IV 2016)). It also clarified that in addition to "reverse engineering" and "independent derivation," "improper means" also does not include "any other lawful means of acquisition" of a trade secret. *Id.* (codified at 18 U.S.C. § 1839(6)(B) (Supp. IV 2016)).

125. *Id.* § 2(a) (codified at 18 U.S.C. § 1836(b)(3)(C) (Supp. IV 2016)).

126. *Id.* (codified at 18 U.S.C. § 1836(b)(2)(A)(i) (Supp. IV 2016)).

127. For instance, the revised ex parte seizure provision required that "the person against whom seizure" would be ordered must have actual possession of both the trade secret and the property to be seized, *id.* (codified at 18 U.S.C. § 1836(b)(2)(A)(ii)(V) (Supp. IV 2016)), it "prohibit[ed]" (rather than merely "restrict[ed]") access to the trade secret by the party requesting the seizure, *id.* (codified at 18 U.S.C. § 1836(b)(2)(B)(iii)(I) (Supp. IV 2016)), and it required the district court to "provide guidance to law enforcement officials" regarding how they are to execute the seizure order, *id.* (codified at 18 U.S.C. § 1836(b)(2)(B)(iv) (Supp. IV 2016)). It also authorizes the court to appoint a special master "to locate and isolate all misappropriated trade secret information and to facilitate the return of unrelated property and data to the person from whom the property was seized." *Id.* (codified at 18 U.S.C. § 1836(b)(2)(D)(iv) (Supp. IV 2016)).

misappropriation and not merely on the information the person knows."[128] Second, the bill included new language regarding the inevitable disclosure doctrine and restraints of trade by providing that an injunction cannot "conflict with an applicable State law prohibiting restraints on the practice of a lawful profession, trade, or business."[129] In effect, these revisions incorporated state law governing restrictive covenants (such as noncompete agreements) by reference, ensuring that such law will apply in federal court, although they did not directly address potential choice of law issues.[130]

Finally, the manager's amendment made several other discrete modifications to the DTSA. It added trade secret misappropriation as a predicate offense for criminal liability under the Racketeer Influenced and Corrupt Organizations Act (RICO),[131] and it increased the penalties for violating the criminal theft of trade secrets under the EEA to the greater of $5 million or three times the value of the stolen trade secrets.[132] It also required the Federal Judicial Center to develop recommended best practices for seizing, storing, and securing trade secret information.[133]

In addition, Senators Charles Grassley (Iowa) and Patrick Leahy (Vermont) offered a new amendment intended to "provide protection to whistleblowers who disclose trade secrets to law enforcement in confidence for the purpose of reporting or investigating a suspected violation of law."[134] This proposal, based on an article by Professor Peter Menell of the University of California, Berkeley School of Law,[135] would immunize an individual from civil and criminal liability for the confidential disclosure of trade secret information to a "[f]ederal, state, or local governmental official, either directly or indirectly, or to an attorney" if the disclosure was made "solely for the purpose of reporting or investigating a suspected violation of

128. *Id.* (codified at 18 U.S.C. § 1836(b)(3)(A)(i)(I) (Supp. IV 2016)).

129. *Id.* (codified at 18 U.S.C. § 1836(b)(3)(A)(i)(II) (Supp. IV 2016)).

130. *See* Sharon K. Sandeen, *Senate Judiciary Committee Passes Amended Defend Trade Secrets Act. What Changed?*, TECH. & MARKETING L. BLOG (Jan. 28, 2016), http://blog.ericgoldman.org/archives/2016/01/senate-judiciary-committee-passes-amended-defend-trade-secrets-act-what-changed-guest-blog-post.htm.

131. S. 1890, 114th Cong. § 3(b) (2015) (codified as amended at 18 U.S.C. § 1961(1) (Supp. IV 2016)).

132. *Id.* § 3(a)(1) (codified at 18 U.S.C. § 1832(b) (Supp. IV 2016)).

133. *Id.* § 6.

134. S. REP. NO. 114-220, at 5 (2016).

135. Peter S. Menell, *Tailoring a Public Policy Exception to Trade Secret Protection*, 105 CALIF. L. REV. 1, 61 (2017).

law."[136] In addition, it would permit the disclosure of a trade secret "in a complaint or other document filed in a lawsuit or other proceeding, if such filing was made under seal."[137] Notably, this provision—unlike the rest of the DTSA—would preempt any contrary federal or state law that would otherwise impose liability for the disclosure.[138] The Senate Judiciary Committee unanimously adopted this Amendment at what is known as an Executive Business Meeting, but the whistleblower provision was never subject to a public hearing where testimony was allowed.[139]

Several months later, in April 2016, the full Senate unanimously voted to pass the DTSA as modified by the manager's amendment.[140] The House then acted quickly, favorably reporting the Senate's version of the DTSA out of committee later the same month without further changes,[141] and then overwhelmingly approving the bill on the floor under suspension of the rules (a procedure typically used for non–controversial legislation).[142] President Obama signed the DTSA into law on May 11, 2016.[143] Pursuant to its terms, the DTSA applies to all acts of trade secret misappropriation occurring on or after this date.[144]

2. *Supporters and Their Arguments*

The DTSA's sponsors offered several reasons in support of a federal civil cause of action for trade secret misappropriation. First, as with the EEA before it, they argued that it was needed to address the growing problem of trade secret theft against American businesses, particularly in light of technological developments since the EEA (like widespread use of the internet) that made it easier to engage in and conceal misappropriation of

136. S. 1890, 114th Cong. § 7(b)(1)(A)(ii) (2015) (codified as amended at 18 U.S.C. § 1833(b)(1)(A) (Supp. IV 2016)).

137. *Id.* § 7(b)(1)(B) (codified as amended at 18 U.S.C. § 1833(b)(1)(B) (Supp. IV 2016)).

138. *Id.* § 7(b)(1)(A) (codified as amended at 18 U.S.C. § 1833(b)(1)(A) (Supp. IV 2016)).

139. S. REP. NO. 114-220, at 5 (2016).

140. 150 CONG. REC. D321 (daily ed. Apr. 4, 2016). The floor vote in the Senate was 87–0.

141. 152 CONG. REC. D400, D408 (daily ed. Apr. 20, 2016); *see also* H.R. REP. NO. 114-529 (2016).

142. 162 CONG. REC. H2028, D438 (daily ed. Apr. 27, 2016). The floor vote in the House was 410–2.

143. 162 CONG. REC. S2675, D501 (daily ed. May 11, 2016).

144. S. 1890, 114th Cong. § 2(e) (2015).

trade secret information.[145] Some also alluded to organized efforts by foreign actors and governments to engage in misappropriation as a reason for Congress to act.[146] Second, sponsors contended that existing state laws varied significantly in their treatment of trade secrets and that the DTSA would help "harmonize U.S. law" by creating a "single national baseline" for trade secret protection.[147] Third, they asserted that the DTSA would benefit trade secret owners by providing access to federal court in a manner similar to other forms of intellectual property, such as patents and copyrights.[148] Finally, supporters pointed to the bill's ex parte seizure provision, which they asserted would allow trade secret owners to quickly obtain a federal court order authorizing the seizure of property to prevent further dissemination of the trade secrets and preserve evidence of misappropriation.[149]

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145. *See* S. REP. NO. 114-220, at 1–2 (2016) (listing several studies suggesting that "annual losses to the American economy caused by trade secret theft" ranged in the hundreds of billions of dollars and asserting that "[p]rotecting trade secrets has become increasingly difficult given ever-evolving technological advancements"); H.R. REP. NO. 114-529, at 3–4 (2016) (citing similar studies). Note, however, that these figures, when traced to the underlying studies, concern the estimated value of *all* intellectual property theft, not just the theft of trade secrets. Moreover, as Zoe Argento has explained, there is scant factual evidence to back up these numbers. *See* Zoe Argento, *Killing the Golden Goose: The Dangers of Strengthening Domestic Trade Secret Rights in Response to Cyber-Misappropriation*, 16 YALE L.J. 172, 197–99 (2014).

146. *See* H.R. REP. NO. 114-529, at 4 (2016) (noting the "'significant and growing threat presented by criminals who engage in espionage on behalf of foreign adversaries and competitors'" (quoting H.R. REP. NO. 112-610, at 1 (2012))); 161 CONG. REC. S7251 (daily ed. Oct. 8, 2015) (statement of Sen. Hatch) ("[C]yber theft of trade secrets is at an all-time high, particularly as it involves Chinese competitors . . . .").

147. 162 CONG. REC. S1630 (daily ed. Apr. 4, 2016); *see also id.* at S1627 (Sen. Hatch) ("[H]aving a uniform set of standards that defines legal protections for trade secrets is crucial . . . . State laws today are perhaps even more variable in their treatment of trade secrets than they were at the time the [UTSA] was proposed in 1979."); H.R. REP. NO. 113-657, at 7 (2014) ("While 48 states have adopted variations of the UTSA, the state laws vary in a number of ways . . . ."); S. REP. NO. 114-220, at 14 (2016) ("This narrowly drawn legislation will provide a single, national standard for trade secret misappropriation . . . .").

148. S. REP. NO. 114-220, at 3 (2016) ("A Federal cause of action will allow trade secret owners to protect their innovations by seeking redress in Federal court, bringing their rights into alignment with those long enjoyed by owners of other forms of intellectual property . . . ."); *id.* at 14–15 ("Victims [of trade secret theft] will be able to move quickly to federal court, with certainty of the rules, standards, and practices to stop trade secrets from winding up being disseminated and losing their value."); *see also* 161 CONG. REC. S7251 (daily ed. Oct. 8, 2015) (Sen. Coons) (explaining the DTSA "gives trade secret owners access to . . . our excellent Federal courts, which provide nationwide service of process and execution of judgments").

149. *See* H.R. REP. NO. 114-529, at 3 (2016).

Numerous large industrial, high–technology, and pharmaceutical and medical device firms promoted enactment of the DTSA, including Boeing, Caterpillar, Corning, Eli Lilly, General Electric, IBM, Intel, Johnson & Johnson, Nike, Pfizer, Procter & Gamble, and 3M, as well as industry and business associations such as the U.S. Chamber of Commerce, the National Association of Manufacturers, the Biotechnology Association, and the Software & Information Industry Associations.[150] Many of these same organizations also engaged in extensive lobbying efforts under the moniker "Protect Trade Secrets Coalition," retained the prominent law firm of Covington & Burling LLP, and expended at least $1.25 million in support of the DTSA.[151] Numerous other U.S.–based firms, including DuPont,[152] Microsoft,[153] Monsanto,[154] and Yahoo!,[155] also engaged in lobbying for the DTSA. The DTSA also received support from the intellectual property bar,

150. Letter from Ass'n of Glob. Automakers, Inc., et al., to Senator Orrin Hatch et al. (July 29, 2015), https://www.congress.gov/crec/2015/10/08/CREC-2015-10-08-pt1-PgS7249.pdf; *see also* Letter from Adobe et al., to Senator Charles E. Grassley et al. (Jan. 20, 2016), http://www.nam.org/Issues/Technology/Intellectual-Property-Rights/Joint-Industry-Coalition-Letter-in-Support-of-Defend-Trade-Secrets-Act-to-Senate.pdf (listing forty–four firms and associations supporting the DTSA).

151. *Protect Trade Secrets Coalition*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/lobby/clientsum.php?id=F119265&year=2017 (last visited Dec. 22, 2017) (disclosing that the Protect Trade Secrets Coalition spent $500,000 in 2014, $520,000 in 2015, and $250,000 in 2016); Isaac Arnsdorf, *How a Bill (with Virtually No Opposition Still Takes Two Years Before It Almost) Becomes a Law (in 2016)*, POLITICO (May 9, 2016) (listing nearly thirty lobbyists who worked in favor of the DTSA's passage).

152. *DuPont Co*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/lobby/clientissues_spec.php?id=D000000495&year=2016&spec=CPT (last visited Dec. 22, 2017) (listing "Intellectual Property Protection and Enforcement – H.R. 3326 and S. 1890 – The Defend Trade Secrets Act" as a lobbying issue).

153. *Microsoft Corp*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/lobby/clientissues_spec.php?id=D000000115&year=2016&spec=CPT (last visited Dec. 22, 2017) (listing "S.1890 – Defend Trade Secrets Act of 2015" as a lobbying issue).

154. *Monsanto Co*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/lobby/clientissues_spec.php?id=D000000055&year=2016&spec=CPT (last visited Dec. 22, 2017) (listing "Issues relating to the Defend Trade Secrets Act of 2015 (H.R. 3326, S. 1890)" as a lobbying issue).

155. *Yahoo! Inc*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/lobby/clientissues_spec.php?id=D000022330&year=2016&spec=CPT (last visited Dec. 22, 2017) (listing "S.1890, Defend Trade Secrets Act" as a lobbying issue).

including the Intellectual Property Law Section of the American Bar Association[156] and the American Intellectual Property Law Association.[157]

3. *Opponents and Their Arguments*

The primary opposition to the DTSA came from a group of law professors. These professors (including the authors of this Article) uniformly acknowledged the need to protect legitimate trade secrets but expressed concerns regarding several aspects of the DTSA,[158] as well as reservations about the broader notion that a federal civil cause of action for trade secret misappropriation was necessary or desirable.[159]

In an August 2014 letter responding to then–pending legislation, thirty–one law professors "urge[d] Congress to reject the proposed legislation to create a new private cause of action under the Economic Espionage Act of 1996."[160] While "acknowledg[ing] the need to increase protection . . . against domestic and foreign cyber-espionage," the letter contended that the proposed legislation "is not the way to address those concerns" because it would "create or exacerbate many existing legal problems."[161] First, the professors argued that existing state law governing trade secrets is "robust" and "substantially uniform," and that adopting a parallel federal statute for trade secret claims—particularly one that did not preempt existing state law—would result in "less uniformity and predictability" because a new federal law would not necessarily follow existing state law precedent.[162] Notably, this is the very concern that animated the Supreme Court's decision in *Erie.* Second, the letter raised concerns that the proposed ex parte seizure provision was "not necessary in light of the broad discretion that federal courts already have under the Federal Rules of Civil Procedure" and that this provision could be misused by trade secret holders to harm

156. *See* Letter from Theodore H. Davis, Jr., Section of Intellectual Prop. Law, Am. Bar Ass'n, to Senator Charles E. Grassley et al. (Oct. 5, 2015), *reprinted in* 161 CONG. REC. S7252–53 (Oct. 8, 2015).

157. *See* Letter from Denise W. DeFranco, President, Am. Intellectual Prop. Law Ass'n, to Senator Charles E. Grassley et al. (Dec. 1, 2015), http://www.aipla.org/advocacy/congress/114C/Documents/AIPLA%20Letter%20Supporting%20S1890%20Trade%20Secret%2012.1.15.pdf.

158. *See generally,* David S. Levine & Sharon K. Sandeen, *Here Come the Trade Secret Trolls*, 71 WASH. & LEE L. REV. ONLINE 230 (2015); Goldman, *supra* note 120.

159. *See generally* Seaman, *supra* note 8; Argento, *supra* note 145.

160. Letter from David S. Levine et al., Professors of Law, to Members of the United States Cong. (Aug. 26, 2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2699735 [hereinafter *Professors' 2014 Letter*].

161. *Id.* at 1.

162. *Id.* at 2.

legitimate competitors.[163] The professors also contended that the legislation could increase the risk of accidental disclosure of trade secret information because defendants would likely challenge the existence of subject matter jurisdiction (specifically, the requirement that the trade secret is "related to a product or service . . . used in interstate or foreign commerce"), and in response, plaintiffs would be compelled to identify and disclose trade secret information early in the litigation process.[164] Finally, the letter argued that federal legislation may have a negative impact on innovation, as threats of misappropriation claims against former employees who join a competitor or start their own business might "limit mobility of labor and potential innovation collaboration" by "reducing the diffusion of skills and knowledge and stifling the innovation that flows from the sharing of ideas and information."[165]

In response to the DTSA's reintroduction the following year, a second letter signed by forty–two law professors reiterated and expanded upon these arguments.[166] First, the letter expressed continued concern that the bill's ex parte seizure provision—although narrower than in previous proposals—"still contains significant potential to cause anticompetitive harm, particularly against U.S.-based small businesses, startups, and other entrepreneurs." It also argued that the ex parte seizure provision was "impermissibly vague" and "may result in significant harm to [an] alleged misappropriator's legitimate business operations."[167] Second, it asserted that the DTSA "appears to implicitly recognize the so-called inevitable disclosure doctrine," which permits trade secret holders to obtain injunctive relief against a former employee if the employee's new job "will inevitably lead [him or her] to rely on the plaintiff's trade secrets."[168] Federal adoption of the inevitable disclosure doctrine, the professors argued, could harm innovation by decreasing labor mobility.[169] In addition, it would conflict with existing law in some states, like California, that have rejected the

163. *Id.* at 3–5.
164. *Id.* at 5.
165. *Id.* at 6.
166. Letter from Eric Goldman et al., Professors of Law, Charles E. Grassley, Chairperson, United States Senate Judiciary Comm. (Nov. 17, 2015), https://cyberlaw.stanford.edu/files/blogs/2015%20Professors%20Letter%20in%20Opposition%20to%20DTSA%20FINAL.pdf [hereinafter *Professors' 2015 Letter*].
167. *Id.* at 3.
168. *Id.* at 4.
169. *Id.* at 5.

doctrine as a matter of long–standing public policy.[170] Third, the letter contended that the DTSA would likely increase the length and cost of trade secret litigation, including through the liberal discovery permitted under the Federal Rules of Civil Procedure.[171] Finally, it reasserted that, contrary to the sponsors' assertions, the DTSA would result in less uniformity.[172] While the law professors ultimately could not stop the DTSA's enactment, their advocacy resulted in numerous changes to the pending legislation.

III. INTERPRETATIVE RULES AND METHODOLOGIES OF THE FEDERAL COURTS

With the DTSA's enactment, we have a federal statute but little federal jurisprudence to guide us as to the meaning of many of its provisions.[173] Since the DTSA is modeled after the UTSA, incorporating several of its provisions verbatim, some appear to assume that the two will be interpreted and applied consistently.[174] But the federal courts' approach to statutory interpretation and post–*Erie* jurisprudence concerning the development and scope of "federal common law" do not necessarily support such an assumption.[175] Moreover, even if federal courts do turn to existing state trade secret law to help interpret or fill gaps in the DTSA's text,[176] they will

170. *Id.* (citing White v. Schlage Lock Co., 125 Cal. Rptr. 2d 277, 291–94 (Ct. App. 2002)); *see also* Letter from Sharon K. Sandeen, Professor of Law, Hamline Univ. School of Law, to Senator Dianne Feinstein (Aug. 24, 2014) (on file with authors) (explaining the long–standing public policy of California).

171. *Professors' 2015 Letter*, supra note 166, at 5–6.

172. *Id.* at 6–7.

173. Some federal jurisprudence exists with respect to the original Economic Espionage Act of 1996 (EEA), but given recent amendments to the EEA by the DTSA and the Theft of Trade Secrets Clarification Act of 2012, Pub. L. No. 112-236, 126 Stat. 1627, there is still a lot of "old" and "new" language to construe.

174. *See, e.g.*, ROBERT MERGES, PETER S. MENELL & MARK A. LEMLEY, INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE: 2017, VOL. I: PERSPECTIVES, TRADE SECRETS, AND PATENTS 43–44 (noting that 47 of 50 states have adopted the UTSA, and stating that the Defend Trade Secrets Act "brought uniformity of federal law without significantly changing the rules that have developed in state law").

175. *See* 19 CHARLES ALAN WRIGHT ET AL., FEDERAL PRACTICE AND PROCEDURE § 4514–20 (3d ed. 2016).

176. *See id.* § 4518 (explaining that federal courts apply the forum's state law when either "a federal statute . . . directs that forum state law is to be applied, or as a matter of discretion in the exercise of their power to determine the content of federal common law"); *cf.* Semtek Int'l, Inc. v. Lockheed Martin Corp., 531 U.S. 497, 504–09 (2001) (electing as a matter of federal common law to adopt state substantive law regarding the preclusive effect of a federal court's judgment in a diversity action because it would promote *Erie* uniformity).

also be faced with the potentially significant question of *which* state law to apply, as the substance of state trade secret law may vary.[177] Thus, although one of the asserted purposes for the DTSA was greater national uniformity (as opposed to *Erie* uniformity), this may be unachievable if federal courts follow forum state precedent, thus federalizing any existing conflicts between states' law.[178]

As further explained below, courts applying the DTSA will be confronted with two separate but overlapping approaches. The first is the familiar process of statutory interpretation based upon the statutory text, congressional intent, legislative history, and other rules and canons of statutory construction. But in cases where these sources fail to provide clear answers—which we think will be common—courts may turn to other sources of law to resolve ambiguities and fill gaps in the DTSA's language, the latter process being known as "interstitial lawmaking" that results in the creation of "specialized federal common law."[179] Thus, despite *Erie*'s famous proclamation that "there is no federal general common law,"[180] federal courts since *Erie* have developed interstitial federal common law in numerous areas, running the gamut from disputes involving comprehensive and preemptive federal statutes to purely state–based causes of action that affect a "uniquely federal interest."[181] Unfortunately, federal courts are not always careful to delineate when they engage in statutory interpretation or in gap–filling, leading a group of civil procedure experts to explain:

> The demarcation between 'statutory interpretation' or 'constitutional interpretation,' on the one hand, and judge-made law on the other, is not a sharp line. Statutory interpretation shades

177. *See* H.R. REP. NO. 114-529, at 4 (2016) ("While 48 states have adopted variations of the UTSA, the state laws vary in a number of ways . . . .").

178. The opponents of the DTSA, including the authors of this Article and even some of its supporters, asserted that claims of a lack of uniformity in state trade secret law were grossly overstated because most states have adopted the UTSA with minimal, if any, changes to its core provisions. *See Professors' 2014 Letter*, *supra* note 160, at 2; *Professors' 2015 Letter*, *supra* note 166, at 6–8.

179. WRIGHT ET AL., *supra* note 175, § 4514; *see also* Radha A. Pathak, *Incorporate State Law*, 61 CASE W. RES. L. REV. 823, 841 (2011) ("It should be acknowledged that such gap-filling is conceived by some as the creation of federal common law and by others as statutory interpretation.").

180. Erie R.R. Co. v. Tompkins, 304 U.S. 64, 78 (1938).

181. *See, e.g.*, Clearfield Tr. Co. v. United States, 318 U.S. 363, 367 (1943) ("In absence of an applicable Act of Congress it is for the federal courts to fashion the governing rule of law according to their own standards."); *see also* Jay Tidmarsh & Brian J. Murray, *A Theory of Federal Common Law*, 100 NW. U. L. REV. 585 (2006).

> into judicial lawmaking on a spectrum, as specific evidence of legislative advertence to the issue at hand attenuates.[182]

The rest of this Part explains the two processes at a macro–level and discusses several cases and issues for illustrative purposes. Part IV then examines specific provisions of the DTSA using these rules and methodologies.

A. RULES OF STATUTORY INTERPRETATION

After reading numerous decisions by federal judges, one is struck by the variety of approaches to statutory interpretation. This is due in part to the different interpretive methodologies and sources that federal courts may use to determine the meaning of a statute.[183] It also depends on how detailed the federal law is and whether it provides meaning on the face of the statute itself or requires gap–filling. From a reading of recent Supreme Court cases, however, some general principles emerge that likely will be followed in interpreting the DTSA.[184]

1. Intent of Congress as Expressed in the Language of the Statute

The process of statutory interpretation begins with the language of the statute itself.[185] At this initial stage, courts avoid extrinsic sources of information concerning congressional intent because Congress is presumed to have intended what it said and "the objective of statutory interpretation

182. PAUL M. BATOR, DANIEL J. MELTZER, PAUL J. MISHKIN & DAVID L. SHAPIRO, HART AND WECHSLER'S THE FEDERAL COURTS AND THE FEDERAL SYSTEM 863 (3d ed. 1988); *see also* Peter Westen & Jeffrey S. Lehman, *Is There Life for* Erie *After the Death of Diversity?*, 78 MICH. L. REV. 311, 330–41 (1980).

183. *See, e.g.*, Paul J. Mishkin, *The Variousness of "Federal Law": Competence and Discretion in the Choice of National and State Rules for Decision*, 105 U. PA. L. REV. 797 (1957).

184. For a general description of this process and the applicable hierarchy, see LARRY M. EIG, CONG. RESEARCH SERV., STATUTORY INTERPRETATION: GENERAL PRINCIPLES AND RECENT TRENDS (2011), https://fas.org/sgp/crs/misc/97-589.pdf. Although this report provides an overview of statutory interpretation methods and does not comprehensively address all scholarship on the topic of statutory interpretation, it is significant because it is intended to serve as a guide for Members of Congress and their staff. *See* Abbe R. Gluck & Lisa Schultz Bressman, *Statutory Interpretation from the Inside—An Empirical Study of Congressional Drafting, Delegation, and the Canons: Part I*, 65 STAN. L. REV. 901 (2013) (presenting the results of the largest empirical study to date of congressional staff statutory drafting practices and knowledge of the rules of statutory interpretation).

185. *See* Lamie v. United States Tr., 540 U.S. 526, 534 (2004) ("[T]he starting point in determining congressional intent is statutory language . . . ."); Cmty. for Creative Non-Violence v. Reid, 490 U.S. 730, 739 (1989) ("The starting point for our interpretation of a statute is always its language.").

is to give effect to the intent of Congress."[186] Where congressional intent is clear, there is no role for the federal courts other than to apply the law as written.[187]

In a perfect world, a statute's language would be complete and unambiguous, but because this is not always the case, other rules of statutory interpretation have been developed to assist courts in determining and applying Congress' intent. After reading the statute for guidance, including applicable statutory definitions, courts typically consult: (1) a dictionary, particularly if a term used in a statute is not defined by the statute; (2) the entirety of the statute and the context of the language at issue; (3) canons of statutory interpretation; and (4) legislative history, although some disapprove of this practice.[188]

2. Statutory Definitions

Unless words used in a statute have statutory definitions, they "will be interpreted as taking their ordinary, contemporary, common meaning."[189] Where statutory definitions are provided, they control even if they differ from the common meaning.[190] An example of this exists in the DTSA where the term "employee," as used in the whistleblower provision, is defined in a way that is inconsistent with the common meaning of that term because it includes a "contractor or consultant of the employer" as part of that definition.[191]

While the DTSA includes a definition section for terms like "improper," "trade secret," and "misappropriation,"[192] many of the words and phrases used in those provisions are themselves undefined. This includes the key concepts of "generally known," "readily ascertainable,"

186. Kirtsaeng v. John Wiley & Sons, Inc., 133 S. Ct. 1351, 1390 (2013) (internal quotation marks omitted).

187. EIG, *supra* note 184, at 5 (quoting Conn. Nat'l Bank v. Germain, 503 U.S. 249, 253–54 (1992)).

188. *Compare* ANTONIN SCALIA & BRYAN A. GARNER, READING LAW (1st ed. 2012), *with* William N. Eskridge, Jr., *Norms, Empiricism, and Canons in Statutory Interpretation*, 66 U. CHI. L. REV. 671 (1999).

189. Diamond v. Diehr, 450 U.S. 175, 182 (1981); *see also* Will v. Mich. Dep't of State Police, 491 U.S. 58, 64 (1989).

190. EIG, *supra* note 184, at 6.

191. *Compare* 18 U.S.C. § 1833(2)(b)(4) (2012), *with* RESTATEMENT (THIRD) OF AGENCY § 7.07 (AM. LAW INST. 2006) (defining an employee). Such definition is, however, consistent with language in the False Claims Act, which gives "employees, contractors, and agents" standing to seek relief from retaliatory actions relating to whistleblowing activity. *See* 31 U.S.C. § 3730(h)(1) (2012).

192. 18 U.S.C. § 1839 (2012 & Supp. IV 2016).

"economic value," and "reasonable efforts" that are embedded in the definition of a trade secret. Thus, even for those parts of the DTSA where definitions exist, federal courts still may have to look elsewhere for guidance in determining their meaning. Hopefully, they will look to the "ordinary meaning" of those terms as they have developed under state trade secret law, but courts may not, particularly where a clear and ordinary meaning has yet to develop under state law.[193]

Although definitions of similar words and phrases may exist in other federal statutes, the preference for statutory definitions ordinarily does not apply to definitions contained in other statutes.[194] Thus, federal courts will interpret the same terms within a statute the same way, but not necessarily consistent with the same language found elsewhere.[195] However, this is not an ironclad rule. For example, a canon of construction known as "the borrowed statute rule"[196] may result in definitions from other statutes (federal or state) being applied if the subject provisions were clearly "borrowed" from the other statute. Moreover, when filling gaps in a statute, it is not unheard of for federal courts to rely upon definitions contained in other statutes.[197] This illustrates how the process of statutory interpretation is convoluted and why the process of filling gaps in a statute may rely on different sources of information than is used in statutory interpretation.

When federal law directly incorporates definitions from other statutes—as is the case with many provisions of the DTSA, including the definition of misappropriation and the remedies provision—the borrowed statute rule directs courts to look to the statute from which the language was borrowed for guidance as to its meaning. Further complicating the process, federal courts may look to state law for a definition when a word is not defined by a federal statute and a dictionary definition does not make sense given the purpose and context of the federal statute.[198]

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193. For example, the definition of "economic value" under state law is both unsettled and under–theorized. *See* Eric E. Johnson, *Trade Secret Subject Matter*, 33 HAMLINE L. REV. 545 (2010).

194. *See, e.g.*, Gross v. FBL Fin. Servs., Inc., 557 U.S. 167, 174 (2009) ("When conducting statutory interpretation, the Court 'must be careful not to apply rules applicable under one statute to a different statute without careful and critical examination.'" (quoting Fed. Express Corp. v. Holowecki, 552 U.S. 389, 393 (2008))).

195. *See* Sullivan v. Stroop, 496 U.S. 478, 484 (1990); *see also* United Sav. Ass'n of Tex. v. Timbers of Inwood Forest Assocs., 484 U.S. 365, 371 (1988).

196. *See infra* notes 218–221 and accompanying text.

197. *See, e.g.*, Ins. Co. of the West v. United States, 243 F. 3d 1367, 1373 (Fed. Cir. 2001) (looking to analogous statute to establish waiver of sovereign immunity).

198. *See, e.g.*, Cmty. for Creative Non-Violence v. Reid, 490 U.S. 730, 739 (1989)

How the incorporation of another statute into a federal statute is worded determines whether the law to be consulted is that which existed as of the time the subject federal statute was enacted or as it has continued to evolve since that time. If a federal statute specifically incorporates language from another statute, the meaning applied is that which existed on the date the federal statute incorporating such language was enacted.[199] But where the federal statute states, by general reference, that another law applies, then it is presumed that Congress intended the ongoing borrowing of that law as it evolves and changes.[200] However, in both situations, "[b]ecause state law applies as a matter of choice in the incorporated state-law context, the *Erie* obligation to apply state law accurately does not apply."[201]

Like statutory language generally, statutory definitions can themselves be ambiguous and incomplete, thus requiring courts to rely upon extrinsic sources of information to determine their meaning. These sources might include dictionary definitions and statutory context, as well as interpretations given to the terms by relevant administrative agencies.[202] Where the federal statutory definition is incorporated from state law, as is the case with the definitions of "trade secret," "misappropriation," and "improper means" in the DTSA, the extrinsic sources may be based on state law.[203]

3. *Dictionary Definitions*

If a statutory definition is ambiguous, federal courts often look at a dictionary of general distribution published around the same time as the

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(applying the definition of "employee" and "scope of employment" set forth in the Restatement of Agency for the work made for hire doctrine in the Copyright Act, 17 U.S.C. §§ 101, 201 (2012)).

199. *See* EIG, *supra* note 184, at 39 ("[I]ncorporations by 'general reference' normally include subsequent amendments, but . . . incorporations by 'specific reference' normally do not.") (citing NORMAN J. SINGER & J.D. SHAMBIE SINGER, 2B SUTHERLAND STATUTES AND STATUTORY CONSTRUCTION §51.07 (6th ed. 2000)).

200. *Id.*

201. Pathak, *supra* note 179, at 845; *see also* Louise Weinberg, *Federal Common Law*, 83 NW. U. L. REV. 805, 838 (1989) ("When the relevant sovereign is identified to be 'the nation,' we know that any law for the issue, state or federal, will be fashioned on the basis of, or constrained by limits reflecting, *national* policy concerns.").

202. *See* Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837 (1984).

203. *See, e.g.*, Reid, 490 U.S. at 739 (applying the definition of "employee" and "scope of employment" set forth in the Restatement of Agency for the work made for hire doctrine in the Copyright Act, 17 U.S.C. §§ 101, 201).

statutory enactment.[204] Issues that arise in applying this rule include deciding upon the proper dictionary and the multiple meanings of some words.[205] And even when a word is defined in a dictionary, sometimes a court will determine that, given the purpose of the legislation and the placement of the word in context, the dictionary definition is not helpful.[206] This is particularly true with words and phrases that have become "words of art" in a particular field or that have a specialized legal meaning.[207] For instance, both the UTSA and the DTSA use the term "generally known," which might be interpreted to mean "generally known to the public." However, under longstanding principles of trade secret law, it also means generally known *within a specific industry*, even if the information is not well–known among the general public.[208]

4. *The Importance of Context*

Sometimes, the words and phrases that are used in a statute have multiple definitions or are not defined in a dictionary at all, thereby requiring federal courts to resort to other canons of statutory interpretation. One such canon states that ambiguous language should be considered in light of the entirety of the statute, which can provide a better understanding of Congress's intent than an isolated word.[209] As one court explained:

> [R]easonable statutory interpretation must account for both "the specific context in which . . . language is used" and "the broader context of the statute as a whole." A statutory "provision that may seem ambiguous in isolation is often clarified by the remainder of the statutory scheme . . . because only one of the permissible

204. *See* St. Francis Coll. v. Al-Khazraji, 481 U.S. 604, 610–11 (1987). However, a court will not consider "idiosyncratic" dictionary definitions. *See* MCI Telecomms. Corp. v. AT&T Co., 512 U.S. 218, 225–30 (1994).

205. *See MCI Telecomms. Corp.*, 512 U.S. at 225–30.

206. *See, e.g.*, Bullock v. BankChampaign, N.A., 133 S. Ct. 1754, 1758 (2013) (finding dictionary definitions of "defalcation" to be "not particularly helpful").

207 *See, e.g.*, Karl N. Llewellyn, *Remarks on the Theory of Appellate Decision and the Rules or Canons About How Statutes Are to Be Construed*, 3 VAND. L. REV. 395, 404 (1950) ("Words are to be taken in their ordinary meaning unless they are technical terms or words of art.").

208 *See* UTSA § 1 cmt.

209. *See* EIG, *supra* note 184, at 4–5.

> meanings produces a substantive effect that is compatible with the rest of the law."[210]

Thus, each statutory provision should be read with reference to the whole act,[211] which in the case of the DTSA may include the uncodified "Sense of Congress" and the EEA as amended by the DTSA.[212]

5. Other Canons of Statutory Construction

Over the years, courts have developed a large number of discretionary canons to assist in interpreting statutes.[213] Thus, although the rule that a statute should be interpreted in accordance with its language is "the preeminent canon of statutory interpretation," other canons may be utilized where appropriate.[214] However, while these canons of construction can prove useful, they are not mandatory and cannot be applied if inconsistent with congressional intent.[215] Rather, they "are designed to help judges determine the Legislature's intent as embodied in particular statutory language" and "other circumstances evidencing congressional intent can overcome their force."[216] Also, one canon may be countered by another, making it difficult to predict which of them a court will apply.[217]

How canons of statutory interpretation are likely to be applied to the DTSA are examined in Part IV; for present purposes, it is worth highlighting a few of them, particularly those that may lead federal courts to rely on state law (including the UTSA and cases that interpret it) when interpreting the meaning of the DTSA.

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210. Util. Air Regulatory Grp. v. EPA, 134 S. Ct. 2427, 2442 (2014) (quoting Robinson v. Shell Oil Co., 519 U.S. 337, 341 (1997); United Sav. Ass'n of Tex. v. Timbers of Inwood Forest Assocs., 484 U.S. 365, 371 (1988)).

211. *See* John Hancock Mut. Life Ins. Co. v. Harris Tr. & Sav. Bank, 510 U.S. 86, 94–95 (1993); Pavelic & Leflore v. Marvel Entm't Grp., 493 U.S. 120, 123–24 (1989).

212. *See* EIG, *supra* note 184, at 35 (discussing the difference between a statement of purpose and a sense of Congress).

213. For a complete list, see WILLIAM N. ESKRIDGE, JR., PHILIP R. FRICKEY & ELIZABETH GARRETT, CASES AND MATERIALS ON LEGISLATION: STATUTES AND THE CREATION OF PUBLIC POLICY 817–18 (4th ed. 2007). *See also generally* Llewellyn, *supra* note 207.

214. BedRoc Ltd., LLC v. United States, 541 U.S. 176, 183 (2004).

215. *See* Circuit City Stores, Inc. v. Adams, 532 U.S. 105, 115 (2001).

216. Chickasaw Nation v. U.S., 534 U.S. 84, 94 (2001).

217. *See* POM Wonderful, LLC v. Coca-Cola Co., 134 S. Ct. 2228, 2236–37 (2014).

a) The Borrowed Statute Rule

Since the DTSA is based upon the earlier adopted UTSA, as well as some aspects of federal trademark and whistleblower laws and the rules of civil procedure, the most significant of the canons of construction is likely to be the "borrowed statute rule." This rule provides that when Congress borrows a statute from another source, it also implicitly adopts prior interpretations placed on that statute, absent an express statement to the contrary.[218] However, this canon only applies if the interpretation in question has garnered widespread acceptance, and it does not apply if the federal statute departs from the borrowed statute in "significant ways."[219] Moreover, as noted previously, there is a difference between the specific incorporation of another statute into a federal law and a general reference to state law.[220]

The borrowed statute rule is most relevant to language from the UTSA that is directly incorporated into the DTSA, such as the definition of misappropriation. This helps explain why many have been quick to assume that UTSA jurisprudence will likely apply to the DTSA. However, because the UTSA itself is not a state statute, but rather a privately–established *uniform law* that has been adopted (sometimes with modifications) by individual states, it is not clear that federal courts will adopt interpretations based on the wording and commentary of the UTSA itself, as opposed to state judicial decisions that have interpreted the enacted version of the UTSA within their jurisdiction. This is significant because, while the adoption of the UTSA by the states is much more uniform than the proponents of the DTSA asserted, there are differences in how states have interpreted and applied several key provisions of the UTSA. Additionally, due to the direct incorporation of language from the UTSA into the DTSA, whether a federal court looks to the UTSA or the forum state's version of the UTSA, it is likely to apply the law that existed as of the date of the

218. *See* Molzof v. United States, 502 U.S. 301, 307 (1992) (adopting the several states definition of "punitive damages"); Metro. Life Ins. Co. v. Taylor, 481 U.S. 58, 65–66 (1987) (holding that because ERISA contained nearly identical language to the LMRA, ERISA must be interpreted in accordance with the LMRA).

219. *See* Shannon v. United States, 512 U.S. 573, 581 (1994) (declining to construe the Insanity Defense Reform Act of 1984 in accordance with prior judicial interpretations of the District of Columbia statute upon which the Act was based).

220. *See* Pathak, *supra* note 179, at 827 n.17 (listing examples of federal laws that take the latter approach).

DTSA's enactment.[221] Finally, as discussed further below, the borrowed statute rule will not necessarily serve to fill gaps in the DTSA, unless federal courts are willing to use state judicial decisions that have filled those gaps. If the federal courts choose to fill gaps themselves, will they use the UTSA and its commentary, the law of the forum state, the law of another state, or common law as reflected in the Restatement series?

b) Presumption in Favor of the Common Law

Another canon of statutory construction states that "when a statute covers an issue previously governed by the common law, [courts] must presume that 'Congress intended to retain the substance of the common law.'"[222] This canon is particularly strong with respect to individual words and phrases that are not otherwise defined in a federal statute.[223] However, if a federal court determines that applying a common law definition or tradition is inconsistent with the federal statutory purpose, it will depart from the common law.[224]

As the history of U.S. trade secret law reveals, there is a rich body of common law related to trade secrets dating back nearly two centuries,[225] making the common law's application to the DTSA plausible.[226] Much of

221. *See supra* notes 199–200 and accompanying text. Fortunately, because the USTA has been in existence for nearly forty years, much of its terminology is well–settled, particularly in states where it was adopted during the last century, but there remain some issues that are unclear, such as the meaning of "independent economic value." *See* Robert Damion Jurrens, *Fool Me Once:* U.S. v. Aleynikov *and the Theft of Trade Secrets Clarification Act of 2012*, 28 BERKELEY TECH. L.J. 833, 835 (2013) (describing the widespread adoption of the UTSA over the past thirty–nine years).

222. Kirtsaeng v. John Wiley & Sons, Inc., 133 S. Ct. 1351, 1363 (2013) (relying upon the common law "first sale doctrine" to interpret language in the 1976 Copyright Act) (internal quotation marks omitted) (internal citation omitted).

223. *See* Nationwide Mut. Ins. Co. v. Darden, 503 U.S. 318, 323–24 (1992) (common law definition of employee); Kamen v. Kemper Fin. Servs., Inc., 500 U.S. 90, 98–99 (1991) (state corporation law); Cmty. for Creative Non-Violence v. Reid, 490 U.S. 730, 739–40 (1989) (common law of agency).

224. *See* Taylor v. United States, 495 U.S. 575, 593–95 (1990) (refusing to follow the common law meaning of "bribery" because doing so would be plainly inconsistent with the statutory purpose); Consolidated Rail v. Gottshall, 512 U.S. 532, 542–44 (1994).

225. *See supra* Section II.A.

226. *Cf.* Bilski v. Kappos, 561 U.S. 593, 594 (2010) (explaining that common law limitations on the scope of patentable subject matter apply, despite the fact that they are not included in the text of the Patent Act: "While not required by the statutory text, these exceptions are consistent with the notion that a patentable process must be 'new and useful.' And, in any case, the exceptions have defined the statute's reach as a matter of statutory stare decisis going back 150 years.").

this common law is also reflected in both the text and commentary to the UTSA, including the common law rules that trade secrets do not include the general skill and knowledge of an employee and that reverse engineering and independent development are not acts of misappropriation.[227] But there are other common law principles that are critical to trade secret law that are not expressly set forth in either the UTSA or the DTSA, such as the law governing the creation of duties of confidentiality and the ownership of trade secrets. Moreover, application of this canon to the DTSA seems inappropriate with respect to common law principles that the UTSA was designed to supersede or replace. For instance, at the time of the UTSA's adoption, there was a split of authority regarding the availability and proper length of injunctive relief for trade secret misappropriation.[228] Some courts held that injunctive relief could be granted as a penalty and be perpetual,[229] but the drafters of the UTSA rejected this view in favor of placing limits on the length of injunctive relief.[230] Additionally, when coupled with the preference for using the law of the forum state, application of this canon may mean the common law of trade secrecy would be applied by federal courts sitting in Massachusetts and New York (two states that have yet to adopt the UTSA), but not elsewhere.

c) *In Pari Materia*

The canon of construction known as *in pari materia* holds that similar statutes should be interpreted similarly,[231] although courts may interpret a statute differently from its predecessor statutes if the purpose of the

227. UTSA § 1 cmt.

228. *See* Richard F. Dole, Jr., *Permanent Injunctive Relief for Trade Secret Misappropriation Without an Express Limit Upon Its Duration: The Uniform Trade Secrets Act Reconsidered*, 17 B.U. J. SCI. & TECH. L. 173, 187–91 (2011) (describing different "common law lines of authority" regarding "the availability and duration of permanent injunctions restraining misappropriation of trade secrets").

229. *See, e.g.*, Elcor Chem. Corp. v. Agri-Sul, Inc., 494 S.W.2d 204 (Tex. App. 1973).

230. *See* UTSA § 2 cmt. ("Although punitive perpetual injunctions have been granted . . . Section 2(a) of [the UTSA] adopts the position of the trend of authority limiting the duration of injunctive relief."); *see also* Sandeen, *supra* note 4, at 514, 519, 532–33 (describing the UTSA's position on the duration of injunctive relief).

231. *See, e.g.*, Morales v. TWA, Inc., 504 U.S. 374, 383–84 (1992) (interpreting the definition of "related to" in accordance with prior definitions under different statutory schemes); *see also* TWA, Inc. v. Indep. Fed'n of Flight Attendants, 489 U.S. 426, 432–33 (1989); Commc'ns Workers of Am. v. Beck, 487 U.S. 735, 750–52 (1988); Wimberly v. Labor & Indus. Relations Comm'n, 479 U.S. 511, 517 (1987); John Hancock Mut. Life Ins. Co. v. Harris Tr. & Sav. Bank, 510 U.S. 86, 101–06 (1993).

legislation suggests material differences between the two.[232] Because the DTSA's whistleblower provision is not based upon common law or borrowed from a state statute, this canon may be applied because there are a number of existing whistleblower provisions under federal law.[233] Additionally, this canon, together with the rule of lenity, raises issues related to Congress' decision to place the DTSA within an existing criminal statute and thereby adopt preexisting language originally interpreted for another purpose. In this regard, for important constitutional reasons, including concerns about vagueness and overbreadth, criminal statutes are generally scrutinized with more care.[234] As a result, federal court decisions in criminal cases under the EEA are likely to constrain a broad interpretation of the DTSA.

d) The Rule of Lenity

The rule of lenity is a canon of statutory construction that is primarily applied to criminal statutes, but can also apply to the interpretation of civil penalties.[235] Generally, "it leads [courts] to favor a more lenient interpretation of a criminal statute 'when after consulting traditional canons of statutory construction, we are left with an ambiguous statute.'"[236] There is a constitutional dimension to this rule that is based upon the demands of due process; that criminal statutes not be vague and overbroad as written and applied.[237] Thus, as with the previous canon, because Congress amended the EEA to add a private civil cause of action (instead of creating a separate civil cause of action outside of the EEA), interpretations of the EEA for purposes of criminal prosecutions are likely to influence how the same language is interpreted for civil purposes.[238] For instance, issues concerning the scope of the federal courts' subject matter jurisdiction have

232. *See* Fogerty v. Fantasy, Inc., 510 U.S. 517, 522–25 (1994).

233. *See e.g.*, 26 U.S.C. § 7623(a)–(b) (2012); 15 U.S.C. § 78U-6 (2012); 7 U.S.C. § 28 (2012).

234. *See* City of Hous. v. Hill, 482 U.S. 451, 459 (1987) (ruling that city ordinance regarding obstruction of a police officer in discharge of duty was unconstitutionally overbroad).

235. *See* Kasten v. Saint-Gobain Performance Plastics Corp., 563 U.S. 1, 16 (2011) (regarding an anti–retaliation provision, finding statute did not warrant application of rule of lenity).

236. *Id.*; *see also* EIG, *supra* note 184, at 30–31.

237. *See* EIG, *supra* note 184, at 30; *see also generally* Shon Hopwood, *Clarity in Criminal Law*, 54 AM. CRIM. L. REV. 695 (2017) (explaining the purpose and history of the "rule of lenity" for interpreting criminal statutes).

238. *See, e.g.*, Leocal v. Ashcroft, 543 U.S. 1, 11–12 & n. 8 (2004) (interpreting "crime of violence" in criminal statute and applying it to noncriminal deportation context).

already arisen under the EEA.[239] Because the DTSA uses similar language, one can expect rulings concerning the federal courts' jurisdiction to hear EEA cases to also define the scope of jurisdiction under the DTSA.

6. *Legislative History*

Opinions concerning the role of legislative history in statutory interpretation differ, ranging from those who believe that legislative history is irrelevant and should never be consulted, to those who assert that legislative history has long been, and should remain, an important tool of statutory construction.[240] As a critic of legislative history, Justice Scalia explained: "In analyzing a statute, we begin by examining the text . . . not by 'psychoanalyzing those who enacted it.'"[241] However, not all federal judges hold Justice Scalia's perspective. Moreover, the use of legislative history often depends upon its nature and purpose.[242] Legislative intent language that is set forth in the legislation itself will often be consulted. Additionally, even if federal courts are unwilling to use legislative history for purposes of statutory interpretation, they may consider it as part of the interstitial lawmaking process.

B. FEDERAL COMMON LAW AND RULES FOR FILLING GAPS

Despite the rules of statutory interpretation, the meaning of a statute cannot always be determined by the statute itself—particularly if the text of the statute is silent on an issue. In these situations, and sometimes dependent on the same sources, federal courts may elect to fill gaps in federal statutes and make federal common law.[243]

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239. *See infra* Section IV.A.1.

240. *Compare* GUIDO CALABRESI, A COMMON LAW FOR THE AGE OF STATUTES 31–43 (1982), *with* ANTONIN SCALIA, A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW 31 (1997).

241. Carter v. United States, 530 U.S. 255, 270–71 (2000) (quoting Bank One Chi., N.A. v. Midwest Bank & Tr. Co., 516 U.S. 264, 279 (1996) (Scalia, J., concurring in part and concurring in judgment)).

242. The legislative history of the 1976 Copyright Act is often relied upon by federal judges, in part, because it consists of numerous reports that were prepared during an extensive drafting process. *See e.g.*, Cmty. for Creative Non-Violence v. Reid, 490 U.S. 730, 743 (1989).

243. *See* United States v. Little Lake Misere Land Co., Inc., 412 U.S. 580, 593 (1973) ("[T]he inevitable incompleteness presented by all legislation means that interstitial federal law making is a basic responsibility of the federal courts."); *see also* Weinberg, *supra* note 201, at 838 ("When the relevant sovereign is identified to be 'the nation,' we know that any law for the issue, state or federal, will be fashioned on the basis of, or constrained by limits reflecting, *national* policy concerns.").

When applied, the process of federal lawmaking to fill gaps in a statutory scheme consists of two basic steps.[244] First, it must be determined if federal courts have the "competence" (power) to make federal common law. At this step, federal courts frequently look at legislative history to determine if Congress intended to leave certain issues to the federal lawmaking process.[245] Such intent may be express or implied. Generally, the less detailed a federal statute, the more likely that Congress intended the federal courts to fill gaps. Second, if power to make federal law exists, federal courts then must determine which body of law to use to fill the gaps.[246] While the Supreme Court has stated a preference for the use of the law of the forum state,[247] for a variety of reasons discussed in Section III.B, courts might look to other sources of law for guidance, such as, in the case of the DTSA, the UTSA and its commentary.

In some circles, the notion that federal courts actually make law is an anathema, but, in fact, lawmaking is a long–standing and necessary part of the judicial process.[248] For a variety of reasons, including the inability or political unwillingness of Congress to address certain issues, federal laws are often written with insufficient detail.[249] Consider the language of section 1 of the Sherman Antitrust Act, which is a single, brief sentence.[250] Because of its brevity, federal courts have been required to both interpret its meaning and fill numerous gaps in its text, including the crucial early decision to read

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244. WRIGHT ET AL., *supra* note 175, § 4514.

245. *See* Margaret H. Lemos, *Interpretative Methodology and Delegations to Courts: Are "Common Law Statutes" Different?*, *in* INTELLECTUAL PROPERTY AND THE COMMON LAW (Shyamkrishna Balganesh ed., 2013) (noting that "explicit delegations of substantive lawmaking power to courts are rare" and giving the Federal Rules of Evidence as one example). The Sherman Antitrust Act is frequently cited as an example of implicit lawmaking power.

246. WRIGHT ET AL., *supra* note 175, § 4518.

247. *See* Kamen v. Kemper Fin. Servs., Inc., 500 U.S. 90, 98 (1991) ("[W]e have indicated that federal courts should 'incorporat[e] [state law] as the federal rule of decision,' unless 'application of [the particular] state law [in question] would frustrate specific objectives of the federal programs.'" (quoting United States v. Kimbell Foods, Inc., 440 U.S. 715, 728 (1979))).

248. *See* Hinderlider v. La Palata River & Cherry Creek Ditch Co., 304 U.S. 92, 110 (1938) (decided on the very same day as *Erie*); *see also* Henry Friendly, *In Praise of* Erie—*And of the New Federal Common Law*, 39 N.Y.U. L. REV. 383, 405 (1964).

249. *See* WRIGHT ET AL., *supra* note 175, § 4516 ("The need for interstitial lawmaking arises as a consequence of the practical reality that it is impossible for Congress to draft any statute in sufficient detail so that it is completely comprehensive and comprehensible.").

250. 15 U.S.C. § 1 (2012).

the word "unreasonable" into the statute.[251] Congress always has the power to change or supersede law developed through this process, but it does not always have the will or the votes to do so.[252]

1. Determining the Power of Federal Courts to Fill Gaps

The first step in the process is for federal courts to determine if they have the authority to make federal common law to fill gaps. The clearest case of such power is a federal statute that indicates congressional intent for courts to fill gaps in the statute, often coupled with language concerning the law to be used.[253] The more difficult cases, particularly in recent years, involve diversity cases based upon state law.[254] Between these extremes are federal question cases based upon a federal statute where an implied delegation by Congress of lawmaking authority to federal courts would have to be found.[255] Sometimes the failure of Congress to provide sufficient specificity is seen as granting such power; other times it requires that the gaps remain until Congress acts.[256] As the Wright & Miller treatise explains:

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251. Bd. of Trade of City of Chi. v. United States, 246 U.S. 231, 238 (1918); *see also* Nat'l Soc'y of Prof'l Eng'rs v. United States, 435 U.S. 679, 688 (1978) ("The [Sherman Act's] legislative history makes it perfectly clear that it expected the courts to give shape to the statute's broad mandate by drawing on common law tradition . . . ."). The Lanham Act is an example of a federal intellectual property law that required significant gap–filling that was more often based upon the development of federal common law than state law. Mark P. McKenna, *Trademark Law's Faux Federalism*, *in* INTELLECTUAL PROPERTY AND THE COMMON LAW (Shyamkrishna Balganesh ed., 2013).

252. *See* City of Milwaukee v. Ill. & Mich., 451 U.S. 304, 314 (1981) ("Federal common law is a 'necessary expedient' . . . and when Congress addresses a question previously governed by a decision rested on federal common law the need for . . . lawmaking by federal courts disappears." (quoting Comm. for Consideration of Jones Falls Sewage Sys. v. Train, 539 F.2d 1006, 1008 (4th Cir. 1976))).

253. This may involve state law being expressly incorporated into federal law by reference without the direct incorporation of the language of a state statute. *See* Pathak, *supra* note 179; Abbe R. Gluck, *Our [National] Federalism*, 123 YALE L.J. 1996, 2020 (2014) (detailing circumstances where Congress has adopted federal laws but then directed federal courts to use state law on specified issues). Two sections of the DTSA provide examples of references to other laws: one directs Congress to look at a provision of the federal Lanham Act, 15 U.S.C. § 1116(d)(11) (2012), for guidance; the other directs federal courts to look at state law governing restraints of trade. *See* 18 U.S.C. § 1836(b)(2)(G) (Supp. IV 2016); *id.* § 1836(b)(3)(i).

254. *See* O'Melveny & Myers v. FDIC, 512 U.S. 79 (1994) (holding in a diversity case that the California rule of decision, rather than a federal rule, governs petitioner's tort liability).

255. WRIGHT ET AL., *supra* note 175, § 4516.

256. *See, e.g.*, Elsevier, Inc. v. Comprehensive Microfilm & Scanning Servs., Inc., No. 3:10–cv–2513, 2012 WL 727943, at *4 (M.D. Pa. Mar. 6, 2012) (declining to fill a gap to find a right of contribution under the Lanham Act).

> [T]he process of filling the interstices is at some fundamental level an inquiry into congressional intent. But the enterprise of ascertaining this intent is somewhat artificial, because the issues raised in disputes over federal common law competence often are matters Congress simply did not contemplate or, for whatever reason, chose to ignore. Accordingly, the process of filling a statutory "gap" becomes an exercise in assigning significance to silence or inadvertent omission.[257]

The realities of the federal lawmaking process—coupled with the policy behind some Supreme Court Justices' reluctance to use legislative history in statutory interpretation—explains why there is an increasing insistence that Congress more clearly express its intent, along with some federal courts' refusals to fill gaps in the absence of such expression of intent.[258] But when the necessity of gap–filling remains, and where Congress has signaled that federal courts can fill gaps, they will do so.

With respect to the DTSA, courts are not dealing with a statute that lacks direction from Congress, but they are not dealing with a gap–less statute either. In fact, at the one hearing on the DTSA in 2015, a senator commented that it is impossible for Congress to adopt a perfect law.[259] Thus, as with other federal statutes—including the federal patent, copyright, and trademark statutes[260]—it is likely that federal courts will find both the need and the power to fill gaps in the DTSA. Because decisions concerning the nature and extent of those gaps, and the law that is used to fill them, may differ among federal courts (at least until the Supreme Court decides an

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257. WRIGHT ET AL., *supra* note 175, § 4516.

258. *See, e.g.*, Texas Indus., Inc. v. Radcliff Materials, Inc., 451 U.S. 630, 647 (2000) ("[W]e are unable to discern any basis in federal statutory or common law that allows federal courts to fashion the relief urged by petitioner . . . ."); *see also* PM Grp. Life Ins. Co. v. W. Growers Assurance Tr., 953 F. 2d. 543 (9th Cir. 1992).

259. *Protecting Trade Secrets: The Impact of Trade Secret Theft on American Competitiveness and Potential Solutions to Remedy This Harm*: *Hearing on S. 1890 and H.R. 3326 Before the Full S. Comm. on the Judiciary*, 114th Cong. (2015) (statement of Sharon Sandeen, Professor of Law, Hamline University School of Law), https://www.judiciary.senate.gov/imo/media/doc/12-02-15%20Sandeen%20Testimony.pdf; *see also* Roderick M. Hills, Jr., *Against Preemption: How Federalism Can Induce the Legislative Process*, 82 N.Y.U. L. REV. 1, 17 (2007) ("[I]f the goal is to mobilize the public to focus its attention on Congress, then it makes sense to choose a default rule that places the burden on the regulated industries to lobby for preemptive legislation, rather than one that places the burden on those anti-preemption interests to lobby for a waiver of preemption.").

260. *See, e.g.,* Diamond v. Chakrabarty*,* 447 U.S. 303, 315–16 (1980) (holding that non–naturally–occurring microorganisms are patentable under expansive language of 35 U.S.C. § 101).

issue), the "imperfect" aspects of the DTSA are apt to lead to a lack of uniformity.[261]

2. *Deciding What Law to Use to Fill Gaps and to Make Specialized Federal Common Law*

Assuming that federal competence to fill gaps exists, the second step in the federal common lawmaking process is to determine what law should be used to help fill the gaps. The Wright & Miller treatise notes that the power of federal courts to make federal common law is not a high hurdle; the more difficult question is whether federal courts can do so in a manner that "displaces" state law.[262] In other words, although a federal statute is involved, the principles enunciated in *Erie* mean that the process must still pay due respect to state law. The critical language of *Erie* states:

> *Except in matters governed by the Federal Constitution or by acts of Congress, the law to be applied in any case is the law of the state*. And whether the law of the state shall be declared by its Legislature in a statute or by its highest court in a decision is not a matter of federal concern. There is no federal general common law.[263]

Importantly, gap–filling under the *Erie* doctrine also has relevance where the applicable "act of Congress" does not directly address an issue.[264] As Justice Scalia explained in *O'Melveny & Myers v. FDIC*, a case in which the Court refused to displace state law:

> In answering the central question of displacement of [state] law, we of course would not contradict an explicit federal statutory provision. Nor would we adopt a court-made rule to supplement federal statutory regulation that is comprehensive and detailed; matters left unaddressed in such a scheme are presumably left subject to the disposition provided by state law.[265]

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261. *See, e.g.*, Sandeen, *supra* note 31.

262. *See* WRIGHT ET AL., *supra* note 175, § 4514 ("[T]here seems to be an easily satisfied threshold for finding sufficient federal interests to justify federal competence, yet . . . there is a reluctance to find that the federal interest is sufficiently strong to justify displacing of forum state law.").

263. Erie R.R. Co. v. Tompkins, 304 U.S. 64, 78 (1938) (emphasis added).

264. *See, e.g.*, De Sylva v. Ballentine, 351 U.S. 570, 580 (1956) (applying the definition of "children" used in the forum state to fill a gap in the 1909 Copyright Act).

265. O'Melveny & Myers v. FDIC, 512 U.S. 79, 85 (1994) (internal quotation marks omitted) (internal citations omitted).

This means that when filling gaps in the DTSA, federal courts will be inclined to consider the law of the forum state first, particularly with respect to language borrowed from state trade secrets law, which is the same allegedly non–uniform law that the DTSA's supporters invoked to justify the law's adoption. Whether and to what extent courts will rely upon sources of law other than the law of the forum state (including, in the case of the DTSA, the UTSA and its commentary) is, as the Wright & Miller treatise explains, "very complicated."[266]

In an attempt to make sense of the jurisprudence, the Wright & Miller treatise identifies three principal exceptions to the preference for the law of the forum state: (1) where there is "significant conflict between some federal policy or interest and the use of state law";[267] (2) where "the policy of the law is so dominated by the sweep of federal statutes that legal restrictions they affect must be deemed governed by federal law";[268] and (3) where there is a "strong national or federal concern originating from the Constitution, from tradition . . . or from practical necessity," including the need for uniformity.[269] The essential issue with respect to the DTSA is whether Congress—which presumably was aware of the Supreme Court's stated preference that federal courts use the law of the forum state to fill gaps—intended for "new" federal common law to be developed instead. Sometimes Congress explicitly states that a state law is preempted or displaced, and other times preemption or displacement must be inferred. A related question is whether any intent to displace the law of the forum state means a total displacement or only a partial displacement.

a) Significant Conflict with Federal Interests

The issue of whether the law of the forum state poses a significant conflict with a federal interest first requires federal courts to determine the federal interest involved.[270] Often, the text and legislative history of the

266. *See* WRIGHT ET AL., *supra* note 175, § 4514 ("Whether state law or federal law controls matters *not covered* by the Constitution or an Act of Congress is a very complicated question, one that does not yield to any simple answer in terms of the parties to the suit, the basis of subject-matter jurisdiction, or the source of the right that is to be enforced.") (emphasis added).

267. *Id.* (quoting Empire Healthchoice Assurance Inc. v. McVeigh, 547 U.S. 677, 679 (2006)).

268. *Id.* (quoting Sola Elec. Co. v. Jefferson Elec. Co., 317 U.S. 173, 176 (1942)).

269. *Id.*

270. *See* O'Melveny & Myers v. FDIC, 512 U.S. 79 (1994) (noting a failure of the FDIC to identify a federal interest and standing for the proposition that the involvement of a federal entity, alone, is not sufficient).

federal statute indicates the interest, but courts have also found significant conflicts with a federal interest in the absence of a federal statute. When a federal statute like the DTSA is involved, the analysis often focuses on whether Congress intended to "displace" the state law that would normally be used to fill gaps.[271] This concept is similar to the issue of federal preemption of state law, but applies whether or not the federal statute preempts state law because the required conflict "need not be as sharp as must exist for ordinary preemption."[272] Most cases in this category "implicate the legal relationships and the proprietary interests of the United States."[273]

The seminal case on the issue of "significant conflicts" is *Clearfield Trust Company v. United States*, decided five years after *Erie*.[274] It involved a check issued by the Works Projects Administration that was accepted for payment by Clearfield Trust despite the endorsement being a forgery.[275] A lawsuit to recover the amount of the check was brought by the United States based upon an express guarantee.[276] Applying Pennsylvania law, the District Court dismissed the lawsuit because the United States failed to give timely notice of the forgery as required by Pennsylvania law.[277] The Court reversed, and the Supreme Court affirmed that decision, finding that "the rights and duties of United States on commercial paper which it issues are governed by federal law rather than state law," largely due to the constitutional authority under which the commercial paper was issued.[278] In determining which law to apply, the Court reasoned that the need for national uniformity required adoption of a federal rule rather than the law of the forum state.

After *Clearfield*, other cases followed suit, but as Justice Scalia summarized in *O'Melveny & Myers v. FDIC*, the cases of displacement of state law are "few and restricted" and "limited to situations where there is a 'significant conflict between some federal policy or interest and the use of state law.'"[279] One reason courts have found to ignore the law of the forum

271. *See id.*
272. Boyle v. U.S. Techs. Corp., 487 U.S. 500, 507 (1988).
273. WRIGHT ET AL., *supra* note 175, § 4515.
274. 318 U.S. 363 (1943)
275. *Id.* at 365.
276. *Id.*
277. *Id.* at 366.
278. *Id.* at 375.
279. *O'Melveny & Myers,* 512 U.S. at 85–86 (quoting Wheeldin v. Wheeler, 373 U.S. 647, 651 (1963); Wallis v. Pan Am. Petrol. Corp., 384 U.S. 63, 68 (1966)).

state is due to the "uniquely federal interests" involved, but the list of "uniquely federal interests" is short. It includes cases involving: (1) the obligations and rights of the United States under its contracts;[280] (2) the civil liability of federal officials;[281] (3) federal procurement policy;[282] and (4) "rights of the United States arising under nationwide federal programs."[283]

Litigants that advocate for a particular interpretation of the DTSA may argue that certain of its provisions, like the whistleblower provision, exhibit a strong federal interest that justifies ignoring forum state law. But it is difficult to make that claim with respect to most of the DTSA since it explicitly recognizes the continuing relevance of state law on many issues.

b) Federal Law Dominates the Area Being Regulated

The second exception to the preference for applying the law of the forum state—that "the policy of law is so dominated by the sweep of federal statutes that legal restrictions which they affect must be deemed governed by federal law"—focuses on the degree to which the federal law regulates a particular area. In the absence of specific language, the issue of displacement of state law is conceptually similar to the body of preemption jurisprudence that examines whether federal law "so occupies the field" that it can be presumed that Congress intended that state law be preempted.[284] As the Wright & Miller treatise explains, "[o]ne way to conceptualize [this] judicial power . . . is as an implied delegation by Congress of lawmaking authority to the federal courts."[285] When the second exception applies, the "strong preference" for application of law of the forum state can be flipped on its head.[286]

There are many examples of federal statutory schemes that have been found to be so comprehensive that federal common law—not the law of the forum state—should be used to fill gaps. These include the Labor

280. Boyle v. United Techs. Corp., 487 U.S. 500, 504 (1988).
281. *Id.* at 505.
282. *Id.* at 505–06.
283. United States v. Kimbell Foods, Inc., 440 U.S. 715, 726 (1979).
284. *See, e.g.,* Int'l Paper Co. v. Ouellette, 479 U.S. 481, 492 (1987) (stating that the Clean Water Act implicitly preempts state claims except where state claims are specifically preserve by the Act's "saving clause").
285. WRIGHT ET AL., *supra* note 175, § 4516.
286. For instance, in *Mississippi Band of Choctaw Indians v. Holyfield*, 490 U.S. 30 (1989), the Court expressed an "assumption" against dependence on state law. *Id.* at 43–44.

Management Relations Act,[287] the Fair Labor Standards Act,[288] the National Flood Insurance Program,[289] and the Employment Retirement Income Security Act (ERISA).[290] But the dominance of a federal statute does not always lead to total displacement of the law of the forum state, and even when a court finds an intent to displace forum state law, a principle of state law still may be adopted as federal common law.[291]Thus, although Congress may have the constitutional power to displace state law, sometimes it indicates a preference not to do so.[292] Also, other principles often tip the balance against displacement of state law, explaining why this area of jurisprudence is so complicated.

There is little indication in the text or legislative history of the DTSA that Congress intended to displace state law when filling gaps in the DTSA. To the contrary, the DTSA incorporates several provisions of state law either directly or by reference. It also contains a provision which explicitly states that the DTSA does not preempt or displace state remedies.[293] But the DTSA also contains provisions that are new to trade secret law, or that concern procedural or administrative aspects of the federal courts. As

287. *See* WRIGHT ET AL., *supra* note 175, § 4 ("The Supreme Court . . . [held] that Section 301(a) of the [Labor Management Relations] Act . . . authorizes federal courts to fashion a body of federal law for the enforcement of these collective bargaining agreements.") (internal quotation marks omitted) (internal citation omitted).

288. *See, e.g.*, Teed v. Thomas & Betts Power Solutions, 711 F.3d 763, 767 (7th Cir. 2013) ("[T]here is an interest in legal predictability that is served by applying the same standard of successor liability [federal common law] either to all federal statutes that protect employees or to none.").

289. *See* WRIGHT ET AL., *supra* note 175, § 4514 n.38 ("Because the National Flood Insurance Program is a statutory program 'conceived to achieve policies which are national in scope, and since the federal government participates extensively in the program . . . it is clear that the interest of uniformity . . . mandates the application of federal law' . . . ." (quoting Flick v. Liberty Mut. Fire Ins. Co., 205 F.3d 386, 390 (9th Cir. 2000))).

290. *Id.* n.19 ("It is well settled that federal common law applies . . . to interpret the provisions of an ERISA benefit plan." (quoting Morais v. Cent. Beverage Corp. Union Emp.'s Supplemental Ret. Plan, 167 F.3d 709, 711 (1st Cir. 1999))).

291. The Bankruptcy Code is an example of a comprehensive federal statute where the law of the forum state is applied on many issues, but on other issues the federal courts have developed federal common law. *See* Butner v. United States, 440 U.S. 48, 54 (1979), *superseded in part by* Bankruptcy Reform Act of 1994, Pub. L. No. 103-394 ("The Bankruptcy Act does include provisions invalidating certain security interests as fraudulent, or as improper preferences over general creditors. Apart from these provisions, however, Congress has generally left the determination of property rights in the assets of a bankrupt's estate to state law.").

292. *See Butner*, 440 U.S. at 54.

293. 18 U.S.C. § 1838 (2012 & Supp. IV 2016).

discussed further below, these provisions of the DTSA are most likely to result in the development of specialized federal common law to fill gaps.

c) Strong National or Federal Concern Originating from the Constitution, Tradition, or Practical Necessity

On the surface, the third exception to the preference for forum state law may seem similar to the first two, but it often arises in situations where there is no federal statute. It "consists of those actions involving matters that are drawn by implication from the Constitution or based upon tradition or necessity."[294] An example is the decision of the Supreme Court in *Bivens v. Six Unknown Named Agents of the Federal Bureau of Narcotics* to recognize a private right of action for violation of the Fourth Amendment.[295] But even the seemingly simple principle of looking for federal laws based upon constitutional provisions cannot necessarily override all state law, as cases involving the Patent and Copyright Acts reveal.[296]

With respect to matters of tradition and necessity, it has been recognized that federal courts can extend immunity to legislators,[297] regulate controversies between states,[298] and create federal law governing admiralty and maritime suits.[299] This may also include trade secrets law. For instance, in a trade secret case involving the importation of goods into the United States, the Federal Circuit rejected application of the trade secret law of Illinois, explaining:

> The question under section 337 [of the Tariff Act of 1930] is not whether the policy choices of a particular state's legislature or those reflected in a particular state's common law rules should be vindicated, but whether goods imported from abroad should be excluded because of a violation of the congressional policy of

294. WRIGHT ET AL., *supra* note 175, § 4517.

295. 403 U.S. 388 (1971).

296. *See* WRIGHT ET AL., *supra* note 175, § 4517 n.41 ("When a state claim has an extra element 'so that it is qualitatively different from a copyright [or patent] infringement claim,' the state law escapes preemption." (quoting Summit Mach. Tool Mfg. Corp. v. Victor CNC Sys. Inc., 7 F.3d 1434, 1440 (1993))).

297. *See id.* § 4517 ("[T]wo decades before *Bivens* . . . the Court extended to state legislators the immunity provided to federal legislators by the Speech and Debate Clause of the Constitution." (citing Tenney v. Brandhove, 341 U.S. 367 (1951))).

298. *See id.* ("[T]he power of federal courts to create federal common law to govern controversies between states was recognized by the Supreme Court quite early and is extremely well-established.").

299. *See id.* ("The power of the federal courts to create federal common law governing admiralty and maritime suits . . . is well established, undoubtedly in recognition of the necessity of establishing a national body of substantive law.").

> protecting domestic industries from unfair competition, which is a distinctly federal concern as to which Congress has created a federal remedy. In light of the fact that section 337 deals with international commerce, a field of special federal concern, the case for applying a federal rule of decision is particularly strong.[300]

If a substantive issue of trade secret law arose, the court stated that it would apply principles of trade secret law as expressed in the Restatement (Third) of Unfair Competition, the UTSA, and the EEA.[301]

As with the previous exceptions to the preference for the law of the forum state, the DTSA does not reflect such a strong issue of federal concern that state law will never be used to fill gaps, but there are individual parts of the DTSA that may involve strong federal interests "originating from the Constitution, tradition or practical necessity." This includes the DTSA's jurisdictional clause and extraterritoriality provision.[302] Thus, these provisions are more likely to result in the development of specialized federal common law than provisions borrowed from state or common law.

d) Other Principles

In addition to the three broad categories of cases identified by the Wright & Miller treatise, there are a number of other principles that might spin the displacement of state law analysis one way or the other and that are often addressed under the three categories discussed above or as part of the statutory interpretation process. The principles that may affect application of the DTSA include:

- The desire for a uniform national standard;[303]
- The administration of the federal courts, including docket control and burdens that are placed on the courts;[304]

300. TianRui Grp. Co. v. Int'l Trade Comm'n, 661 F.3d 1322, 1327 (2011).

301. *Id.* at 1328. It remains to be seen if federal courts will now apply the DTSA in such situations or continue to develop federal common law for such purposes.

302. *See infra* Parts IV.A.1, IV.A.5.

303. *See, e.g.*, Int'l Paper Co. v. Ouellette, 479 U.S. 481, 496 (1987) ("[State common law] nuisance standards often are 'vague' and 'indeterminate. The application of numerous States' laws would only exacerbate the vagueness and resulting uncertainty.").

304. *See* WRIGHT ET AL., *supra* note 175, § 4514, n.38 ("A federal court may use its supervisory power to formulate procedural rules to 'administer its docket and preserve the integrity of the judicial process.'" (quoting United States v. Goodson, 204 F.3d 508, 514 (2000))).

- Where the issue at hand involves the equitable powers of the court;[305]
- Matters related to access to court records;[306] and
- Where different language is used.[307]

The principles that tend to spin the analysis away from the displacement of state law include:

- Matters traditionally covered by common law;[308]
- Matters on which no federal common law exists;[309]
- Where state law is largely undisturbed by the federal statute;[310]
- Where "private parties have entered legal relationships with the expectation that their rights and obligations would be governed by state-law standards;"[311] and
- Judicial reluctance to create federal common law regarding criminal matters.[312]

As the foregoing indicates, a common argument in favor of federal courts exercising federal lawmaking power and displacing the law of the

305. *See, e.g.*, LaShawn A. by Moore v. Barry, 144 F.3d 847, 853 (D.C. Cir. 1998) ("[A] federal court has broad equitable powers, and may, in certain instances, override state or local law for the purpose of enforcing a decree designed to remedy violations of federal law.") (internal citations omitted) (citing Swann v. Charlotte–Mecklenburg Bd. of Educ., 402 U.S. 1, 15 (1971)).

306. *See* Nixon v. Warner Commc'ns, Inc., 435 U.S. 589, 597–98 (1978) (recognizing a common law right to inspect and copy judicial records).

307. *See, e.g.*, Canova v. Shell Pipeline Co., 290 F.3d 753, 756–57 (5th Cir. 2002) (applying general common law principles because state law used a different terminology).

308. *See* Patterson v. McLean Credit Union, 491 U.S. 164, 183 (1989) (explaining the Court's "reluctan[ce] to federalize matters traditionally covered by state common law") (internal quotation marks omitted) (internal citation omitted).

309. *See, e.g.*, Brissett v. Ashcroft, 363 F.3d 130, 133 (2d Cir. 2004) ("Where, as here, there is no extant body of federal common law in the area of law implicated by the statute, we may use state law to inform our interpretation of the [relevant] statutory language.").

310. *See, e.g.*, PM Grp. Life Ins. Co. v. W. Growers Assurance Tr., 953 F.2d 543, 546 (9th Cir. 1992) ("The case for adopting state law rules is strongest where Congress legislates interstitially, leaving state law largely undisturbed.").

311. Kamen v. Kemper Fin. Servs., Inc., 500 U.S. 90, 98 (1991).

312. *See, e.g.*, United States v. Christie, 717 F.3d 1156, 1170 (10th Cir. 2013) ("With few exceptions, federal courts have abjured the power to fashion a federal common law of crime, holding that the Constitution generally assigns the job of specifying federal crimes and punishments to the Legislative Branch.").

forum state is the asserted need for uniformity.[313] However, as noted by Justice Scalia in *O'Melveny & Meyers*, if the federal courts accepted the uniformity argument in every case, they would "be awash in federal common law rules."[314] Thus, federal courts often accept a lack of uniformity either because the federal statute explicitly or implicitly does so, or because another of the above–listed principles applies to counterbalance the asserted benefits of uniformity.[315]

For instance, in *Kamen v. Kemper Financial Services, Inc.*, the Supreme Court overturned a decision of the Court of Appeals that adopted as federal common law a rule of the American Law Institute (ALI) instead of the law of the forum state.[316] Application of the ALI's "universal demand rule" had resulted in dismissal of the plaintiff's complaint under the federal Investment Company Act because it abolished the futility exception still applicable in the forum state. Citing *Clearfield*, the Court explained:

> [O]ur cases indicate that a court should endeavor to fill the interstices of federal remedial schemes with uniform federal rules only when the scheme in question evidences a distinct need for nationwide standards.[317]

Thus, it was not error for the lower court in *Kamen* to fill gaps in the federal statute, but it drew its rule from the wrong source. The countervailing principle against national uniformity was that the case involved an area of law "in which private parties have entered legal relationships with the expectation that their rights and obligations would be governed by state-law standards."[318]

With respect to matters typically covered by common law, the best way to think of the principle is as a commonsense constraint on the power of federal courts to make "new" law when state law has already spoken on an issue. As Justice Kennedy explained in *Patterson v. McClean Credit Union*, "[a]lthough we must do so when Congress plainly directs, as a rule we

313. *See* Frost, *supra* note 31, at 1574; Sandeen, *supra* note 261.

314. 512 U.S. 79, 88 (1994) (internal quotation marks omitted).

315. *See* POM Wonderful LLC v. Coca-Cola Co., 134 S. Ct. 2228, 2240 (2014) ("Congress not infrequently permits a certain amount of variability by authorizing a federal cause of action even in areas of law where national uniformity is important.").

316. 500 U.S. 90 (1991).

317. *Id.* at 98.

318. *Id.* (citing United States v. Kimbell Foods, Inc., 440 U.S. 715, 728–729, 739–40 (1979) (commercial law); Reconstruction Fin. Corp. v. Beaver County, 328 U.S. 204, 210 (1946) (property law)); *see also* De Sylva v. Ballentine, 351 U.S. 570, 580–81 (1956) (borrowing from family law because of primary state responsibility).

should be and are reluctant to federalize matters traditionally covered by state common law."[319] Thus, as a general rule, "[s]tatutes which invade the common law . . . are to be read with a presumption favoring the retention of long-established and familiar principles, except when a statutory purpose to the contrary is evident"[320] and provided the common law is "well-established."[321]

Based upon the foregoing, the decision to displace state law with "new" federal common law is most prevalent when Congress so directs and when it legislates in an area without a rich common law backdrop. Mark McKenna explained this phenomenon with respect to the Lanham Act (the federal law governing trademarks) when he noted that the paucity of existing state trademark law led to the development of a federal common law to fill gaps in the Lanham Act.[322] Interestingly, the absence of a body of state trademark law was the result of the timing of the *Erie* decision, which occurred several years before the Lanham Act's adoption, as well as the *Erie* Court's rejection of "federal general common law," including that governing federally registered trademarks before 1938. Because states did not have much time before the Lanham Act's adoption in 1946 to develop a robust set of state trademark principles to replace the pre–*Erie* federal common law, the federal courts did so.[323]

The same cannot be said of the DTSA, which was adopted against the backdrop of a robust set of state trade secret principles that were largely put in place after—and as a result of—*Erie*.[324] But an issue with respect to the DTSA is whether the common law of trade secrecy will continue to be applied by federal courts when such law was displaced in most states by the UTSA. On one hand, the UTSA changed (or at least settled) some common law principles of trade secret law that developed before the UTSA was adopted, but on the other hand, its drafting history and commentary contain statements expressing an intent not to change common law, at least too

319. 491 U.S. 164, 183 (1989) (internal quotation marks omitted).

320. Isbrandtsen Co. v. Johnson, 343 U.S. 779, 783 (1952).

321. Astoria Fed. Sav. & Loan Ass'n v. Solimino, 501 U.S. 104, 108 (1991); *cf.* PM Grp. Life Ins. Co. v. W. Growers Assurance Tr., 953 F.2d 543, 546 (9th Cir. 1992) ("The case for adopting state law rules is strongest where Congress legislates interstitially, leaving state law largely undisturbed. Under those circumstances, comity and common sense counsel against exercising the power of federal courts to fashion rules of decision as a matter of federal common law.").

322. McKenna, *supra* note 251.

323. *Id.*

324. *See* Sandeen, *supra* note 4.

much.[325] Thus, federal courts could, and arguably should, look to the UTSA for the expression of the common law of trade secrecy. If they look instead to the trade secrecy provisions of the Restatement (Third) of Unfair Competition, some differences between the interpretation and application of the UTSA and the DTSA may emerge.

3. Deciding Which State is the Forum State

When a federal court decides to apply the law of the forum state, either because Congress directed it to do so or because it follows the Supreme Court's preference, a separate issue arises regarding which state's law applies.[326] This is due to the fact that the choice of law rules of the forum state (including enforceable choice of law provisions of a contract) might require another state's law to apply.[327] The extent to which the issue arises in DTSA cases and how the choice of law affects outcomes remains to be seen, but the issue has already arisen in cases under the UTSA.[328]

4. Deciding What Law Will Be Used to Displace the Law of the Forum and Create Specialized Federal Common Law

The last step in the process of gap–filling is to decide what the federal law will be. In doing so, federal courts create a body of "specialized federal common law" which may be based upon a host of laws and legal principles (including state law) or developed from whole cloth. As the Supreme Court explained in *United States v. Standard Oil Co. of California*, a case decided the same year as *Erie*:

> It is true, of course, that in many situations, and apart from any supposed influence of the *Erie* decision, rights, interests and legal relations of the United States are determined by application of state law, where Congress has not acted specifically. In our choice of the applicable federal rule we have occasionally selected state law. . . . In other situations, it may fairly be taken that Congress has consented to application of state law, when acting partially in relation to federal interests and functions, through failure to make other provision concerning matters ordinarily so governed. And in

325. *Id.*
326. WRIGHT ET AL., *supra* note 175, § 4518.
327. U.S. bankruptcy courts have struggled with these issues in many cases. *Id.*
328. *See, e.g.*, Clorox Co. v. S.C. Johnson & Son, Inc., 627 F. Supp. 2d 954 (2009) (applying California law even though the case was filed in Wisconsin).

> still others state law may furnish convenient solutions in no way inconsistent with adequate protection of the federal interest.[329]

The goal of this process, although resulting in the development of federal common law, is always to apply the intent of Congress.[330]

Ironically, after deciding to displace state law, federal courts may decide to adopt state legal principles as federal common law, but not necessarily the law of the forum state.[331] This can happen, for instance, where the law of the forum state is inconsistent with the purpose of the federal statute or is outside the norm of the majority of state laws. As the Miller & Wright treatise explains:

> In creating federal common law or determining its content, a court is free to choose any rule it deems appropriate, and it may look for guidance to other federal contexts, to what it perceives to be first principles, to considerations of equity and convenience, or to forum state law.[332]

The sources of law and legal principles that federal courts have used to create federal common law include other federal laws,[333] uniform laws,[334] the "better reasoned" common law as expressed in the Restatement or elsewhere,[335] and principles of equity.[336] But whether these resources are used ultimately depends upon what each federal court deems appropriate and, as a practical matter, what arguments are made by counsel.

For instance, in *Mississippi Band of Choctaw Indians v. Holyfield*, after the Court decided not to follow the law of the forum state (Mississippi), it elected to apply the common law meaning of the term at issue. As the Court

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329. 332 U.S. 301, 308–09 (1947) (internal quotation marks omitted) (internal citations omitted).

330. *See, e.g.*, Kirtsaeng v. John Wiley & Sons, Inc., 133 S. Ct. 1351, 1373 (2013) (Ginsburg, J., concurring) ("In the interpretation of statutes, the function of the courts is easily stated. It is to construe the language so as to give effect to the intent of Congress.") (internal quotation marks omitted) (internal citation omitted).

331. *See, e.g.*, Singer v. Black & Decker Corp., 964 F.2d 1449, 1453 (1992) ("In fashioning federal common law, courts do not look to the law of a particular state, but rather should apply common-law doctrines best suited to furthering the goals of ERISA . . . ."); *see also* Pathak, *supra* note 179, at 838 ("The rule maker could have chosen to create a uniform federal rule but it instead decided to adopt a rule from state law. As a formal matter, therefore, the borrowed state law is actually federal law.").

332. WRIGHT ET AL., *supra* note 175, § 4514.

333. *Id.* § 4518 n.6.

334. *Id.* § 4518 n.9.

335. *Id.*

336. *Id.* § 4518 n.5.

explained, "[t]hat we are dealing with a uniform federal rather than a state definition does not, of course, prevent us from drawing on general state-law principles to determine 'the ordinary meaning of the words used.'"[337]

Semtek International Inc. v. Lockheed Martin Corp.[338] provides another illustration of the process that a federal court may follow when a federal law (in that case, the Federal Rules of Civil Procedure) fails to specifically address an issue. After first finding that neither a cited state rule of decision nor a federal statute applied to answer the question at hand, Justice Scalia, writing for the Court, held that federal common law applies to determine the preclusive effect of a judgment rendered by a federal court sitting in diversity.[339] But having done so, he then looked to the law of the forum state to decide what the "specialized federal common law" should be.[340]

The copyright case of *Community for Creative Non-Violence v. Reid*[341] is an example of the use of Restatement definitions to give meaning to a federal statute. In *Reid*, the Court was required to determine the meanings of "employee" and "scope of employment" as used in the 1976 Copyright Act's definition of a work made for hire.[342] Because neither term was defined in the Act itself, the Court decided to use the common law definitions, explaining:

> It is . . . well established that "[w]here Congress uses terms that have accumulated settled meaning under . . . the common law, a court must infer, unless the statute otherwise dictates, that Congress means to incorporate the established meaning of these terms." . . . In the past, when Congress has used the term "employee" without defining it, we have concluded that Congress intended to describe the conventional master-servant relationship as understood by common-law agency doctrine.[343]

Thus, *Reid* is an example of a federal court applying the canon of construction that favors application of common law, but one where the Restatement's explication of common law is adopted instead of the common law of the forum state.

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337. *Id.*
338. 531 U.S. 497 (2001).
339. *Id.* at 508.
340. *Id.*
341. 490 U.S. 730 (1989).
342. *See id.* at 739 ("The Act nowhere defines the terms 'employee' or 'scope of employment.'").
343. *Id.* at 739–40 (citing NLRB v. Amax Coal Co., 453 U.S. 322, 329 (1981); Perrin v. United States, 444 U.S. 37, 42 (1979)).

C. THE EFFECT OF SPECIALIZED FEDERAL COMMON LAW

As the foregoing sets forth, the development of "specialized federal common law" is the last step in a hierarchical process designed to determine the meaning of a federal statute. While federal courts that engage in this process may make federal law from whole cloth, they often choose to adopt the law of a state or a uniform law. In any case, the significance of creating federal common law is that it "is truly federal law in the sense, by virtue of the Supremacy Clause, [that] it is binding on state courts, as well as in the federal courts."[344]

The importance of this with respect to the DTSA is that if federal courts (and ultimately the Supreme Court) decide not to use the UTSA as the basis for any specialized federal common law, over time the federal law of trade secrecy may diverge from the UTSA. Imagine, for instance, if courts decide to use the law of New York (a non–UTSA state) instead of the UTSA, either for cases filed in New York or more broadly. Also, consider how the trade secret law of a given state may change if state courts, in considering a DTSA claim,[345] are required to apply federal common law to DTSA claims that are considered alongside parallel claims brought under state trade secret law. Depending upon what the federal common law is, either the two sets of laws will tend to conform, or there will be two different sets of laws, state and federal, leading to potentially divergent outcomes.

IV. APPLYING THE INTERPRETATIVE RULES AND METHODOLOGIES TO THE DTSA

In this Part, we explore some of the issues that are likely to arise as federal courts apply the foregoing interpretive rules and methodologies to the DTSA. First, we examine portions of the DTSA that are *new* to U.S. trade secret law, including sections of the EEA that were amended by the DTSA. Second, we address parts of the DTSA that were *borrowed* from the UTSA and are expressly defined in the DTSA, such as "misappropriation." Third, we consider how federal courts may deal with words and concepts in the DTSA that were *borrowed* from the UTSA, but that are *not defined*. Lastly, we provide a list of issues likely to arise in trade secret cases, but which are *not directly addressed* by the DTSA.

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344. WRIGHT ET AL., *supra* note 175, § 4514.

345. The DTSA authorizes original but not exclusive jurisdiction in federal courts, *see* 18 U.S.C. § 1836(c) (Supp. IV 2016), meaning that state courts have concurrent authority to decide claims under the DTSA. (Of course, a defendant sued in state court under the DTSA can remove to federal court pursuant to 28 U.S.C. § 1441(a) (2012).)

A. INTERPRETING AND APPLYING THE "NEW" LANGUAGE

On the surface, how federal courts should interpret and apply the provisions of the DTSA that are "new" (that is, not contained in the UTSA or the EEA) ostensibly presents the most straightforward of the four scenarios because it should merely be a matter of determining congressional intent as embodied in the statutory text, without any need to consider the UTSA. However, the provisions in question have some ambiguities that suggest courts may need to rely upon extrinsic sources for purposes of statutory interpretation, if not gap–filling.[346] Moreover, several provisions are procedural in nature and therefore involve issues where the federal courts have significant experience. The more significant question is: which extrinsic sources will federal courts look to and what role, if any, will the UTSA and its commentary play in this analysis?

The "new" provisions of the DTSA include one that was the subject of extensive discussion and amendment (the ex parte seizure provision); one that was added late in the process and was not the subject of a public hearing where testimony was taken (the whistleblower provision); and several less detailed provisions, most of which deal with issues ordinarily considered to be within the exclusive province of the federal government and its courts (for instance, the federal courts' jurisdiction; the statute's extraterritorial provision; and the criminal law provisions of the EEA).

1. The Commerce Clause Provision

The provision of the DTSA that creates a civil cause of action (section 1836) contains a jurisdictional clause with three distinct parts.[347] This provision is based primarily upon Congress' Commerce Clause powers,[348]

346. Although the two provisions in question are very detailed, gap–filling may be needed for terms that are not defined (such as the meaning of "disclosure" in the whistleblower provision), but as noted previously, sometimes such issues are framed as matters of statutory interpretation rather than gap–filling.

347. *See* 18 U.S.C. §§ 1836 (Supp. IV 2016) ("An owner of a trade secret that is misappropriated may bring a civil action under this subsection if the trade secret is related to a product or service . . . .").

348. *See* S. REP. NO. 104-359, at 4 (1996) (explaining for the EEA that "the basis for the protection of proprietary economic information is rooted in . . . the power 'to regulate Commerce . . . among the several states'"); S. REP. NO. 114-220, at 14 (2016) ("This jurisdictional nexus to interstate or foreign commerce is identical to the existing language required for Federal jurisdiction over the criminal theft of a trade secret. . . ."). Interestingly, the House version of the DTSA as introduced also relied on the Patent and Copyright Clause, U.S. CONST. art. I, § 8, cl. 8, as constitutional authority for the law, 161 CONG. REC. H5772 (daily ed. July 29, 2015), even though the DTSA provides that it "shall not be

but its language predates the DTSA because it is modeled after similar text in its predecessor, the EEA.[349] It provides that:

> An owner of a trade secret that is misappropriated may bring a civil action under this subsection *if the trade secret is related to a product or service used in, or intended for use in, interstate or foreign commerce*.[350]

What it means for trade secrets to be (1) "related to a product or service," (2) "used in, or intended for use in," and (3) "interstate or foreign commerce" are the critical questions, but none of this terminology is further defined in the DTSA. Nor is such terminology part of the UTSA or the common law of trade secrecy. As a result, if it is deemed ambiguous, courts will likely turn to precedents under the EEA and the language and legislative history of the DTSA to determine the meaning of these phrases.

Based upon comments by the DTSA's proponents, some apparently assume that the DTSA's jurisdictional requirement will be as easy for trade secret owners to satisfy as it is for trademark owners under the Lanham Act.[351] However, the jurisdictional language of the two laws is different. Most importantly, the Lanham Act applies to "all commerce which may be lawfully regulated by Congress,"[352] whereas the DTSA is more circumscribed. Moreover, even though the "in commerce" language of the two statutes is similar and has been broadly interpreted under the Lanham Act to apply to intrastate activities that substantially affect interstate commerce,[353] the DTSA's jurisdiction appears narrower because (unlike the Lanham Act) there must be actual or intended use of the secret "related to a product or service" in "interstate or foreign commerce."[354]

To date, only a few cases have explored the jurisdictional provisions of the EEA in depth, but those that do tend to suggest that it may be read somewhat more narrowly than proponents assume. The constitutionality of

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construed to be a law pertaining to intellectual property for purposes of any other Act of Congress." Pub. L. No. 114-153, § 2(g), 130 Stat. 381, 382 (2016).

349. *Compare* 18 U.S.C. § 1836(b)(1) (Supp. IV 2016), *with id.* § 1832(a) (2012).

350. *Id.* § 1836(b)(1) (Supp. IV 2016) (emphasis added).

351. The Lanham Act requires that the plaintiff plead and prove that it "used in commerce" a reproduction, counterfeit, copy, or colorable imitation of plaintiff's mark. 15 U.S.C. §§ 1114, § 1125 (2012).

352. *Id.* § 1127.

353. *See e.g.*, Christian Faith Fellowship Church v. Adidas AG, 841 F.3d 986 (Fed. Cir. 2016); Larry Harmon Pictures Corp. v. Williams Rest. Corp., 929 F.2d 662 (Fed. Cir. 1991).

354. 18 U.S.C. § 1836(b)(1) (Supp. IV 2016).

section 1832 as originally enacted in the EEA was first considered in *United States v. Hsu,* a decision that includes language supporting a broad reading of "related to." [355] In that case, the court refused to find the "related to" terminology void for vagueness, noting:

> We reject [defendant]'s argument that the term "related to or included in a product that is produced for or placed in interstate or foreign commerce" is unacceptably vague . . . . We believe the term "related to or included in" is readily understandable to one of ordinary intelligence, particularly here where the defendant appears to be well versed as to the relationship (and technological differences) between "first generation" and "second generation" taxol technology.[356]

But such a ruling relied upon the specific facts of the case and portends the need in every DTSA case to determine what "related to" means for the specific goods or services at issue.

More recently, *United States v. Aleynikov*[357] involved a criminal prosecution under the original language of section 1832 of the EEA for the alleged theft of source code related to Goldman Sachs' proprietary high–frequency trading system.[358] At that time, section 1832 required that the allegedly misappropriated trade secret information be [1] "related to or included in" [2] "a product that is" [3] "produced for or placed in interstate or foreign commerce."[359] After first noting that the quoted language included words of limitation (relying in part of the legislative history of the EEA), the Second Circuit applied the provision's "natural meaning" and found that it applied to two different groups of products: those that were already "placed in" the market, and those that were "produced for" the market.[360] The court also noted that as a criminal statute, any ambiguity regarding the jurisdictional provision's scope "should be resolved in favor" of the defendant consistent with the rule of lenity.[361] As a result, the court was unwilling to read this language as broadly as the government urged, finding that the alleged trade secret information was neither "placed in" or

355. 40 F. Supp. 2d 623 (E.D. Pa. 1999).
356. *Id.* at 627.
357. 676 F.3d 71 (2d Cir. 2012).
358. *Id.* at 75.
359. *Id.* at 79.
360. *Id.* at 80.
361. *Id.* at 82.

"produced for" interstate or foreign commerce, and it therefore dismissed the charges against the defendant.[362]

Following *Aleynikov*, Congress quickly passed the Theft of Trade Secrets Clarification Act of 2012, which amended the language of section 1832 so that it now reads: "related to a product or service used in or intended for use in interstate or foreign commerce."[363] This language then became the model for section 1836 of the DTSA.[364] Significantly, in drafting both the Theft of Trade Secrets Clarification Act and the DTSA, Congress did not take up the *Aleynikov* court's invitation to exercise the full extent of its Commerce Clause powers, instead continuing to use words of limitation, specifically "related to." By borrowing the language of section 1832 for use in section 1836, courts interpreting the language of section 1836 are likely to apply precedent under section 1832 pursuant to the borrowed statute rule and as affected by the rule of lenity.

In *United States v. Agrawal*,[365] a case decided after Congress changed the jurisdictional language in the wake of *Aleynikov*, the same court reached a different result, finding that jurisdiction existed in large part due to the specific facts alleged in the indictment, thereby highlighting the fact–specific nature of the EEA's (and by extension, the DTSA's) jurisdictional requirement. Rather than asserting that the purported trade secrets were themselves a product sold in interstate commerce, the indictment alleged that the subject trade secrets (confidential computer code) were "related to" a trading system that was a "product" sold in interstate commerce.[366] In dicta, the court briefly reviewed Supreme Court cases construing the phrase "related to" suggesting both an expansive and narrow interpretation of the EEA provision, ultimately concluding that it "need not delineate the outer limits of [its] reach."[367]

In addition, while the extent of the federal courts' jurisdiction is obviously a matter of federal interest, principles of federalism nonetheless may counsel in favor of a narrow reading of the DTSA's jurisdictional requirement. In *Kirschbaum Co. v. Walling*, the Supreme Court noted that when Congress legislates in an area historically dominated by state law, courts should not assume that the new federal statute eviscerates states' jurisdiction entirely:

362. *Id.* at 81 (quoting Russell v. United States, 471 U.S. 858, 859–60 & n.4 (1985)).
363. Pub. L. No. 112-236, 126 Stat. 1627 (2012).
364. *See supra* Section II.E.
365. 726 F.3d 235 (2d Cir. 2013).
366. *Id.* at 245.
367. *Id.* at. 248.

> The judicial task in marking out the extent to which Congress has exercised its constitutional power over commerce is not that of devising an abstract formula. . . . We cannot, therefore, indulge in the loose assumption that when Congress adopts a new scheme for federal industrial regulation, it thereby deals with all situations falling within the general mischief which gave rise to the legislation. Such an assumption might be valid where remedy of the mischief is the concern of only a single unitary government. It cannot be accepted where the practicalities of federalism—or, more precisely, the underlying assumptions of our dual form of government and the consequent presuppositions of legislative draftsmanship which are expressive of our history and habits—cut across what might otherwise be the implied range of the legislation.[368]

In other words, because Congress' power is limited, there is a general rule of statutory construction that "federal jurisdiction should be construed strictly."[369] As the foregoing quote suggests, this rule is particularly strong in areas where state law has typically governed, like trade secret law, and is particularly true here, where Congress deliberately decided not to preempt existing state trade secret law (except to the extent inconsistent with the whistleblower provision).[370]

Even if courts adopt a broad definition of interstate commerce analogous to the Lanham Act, the practical application of the DTSA will require plaintiffs to allege and establish facts that they are not required to prove under the UTSA. Under the UTSA, trade secrets need not be used or intended for use "in commerce" to be protected,[371] although available

368. Kirschbaum Co. v. Walling, 316 U.S. 517, 520 (1942).

369. *See, e.g.*, United States v. Pethick, 513 F.3d 1200, 1202 (10th Cir. 2008) ("Statutes conferring jurisdiction must be strictly construed."); Boelens v. Redman Homes, Inc., 748 F.2d 1058, 1067 (5th Cir. 1984) ("[S]tatutes conferring jurisdiction on federal courts are to be strictly construed, and doubts resolved against federal jurisdiction.").

370. *See supra* Part II.

371. For example, negative know–how is protected. *See* UTSA § 1 cmt. ("The definition [of a trade secret] includes information that has commercial value from a negative viewpoint, for example the results of lengthy and expensive research which proves that a certain process will not work could be of great value to a competitor."); *see also generally* Charles Tait Graves, *The Law of Negative Knowledge: A Critique*, 15 TEX. INTELL. PROP. L.J. 387, 416 (2007) (further explaining and critiquing the "negative know-how" theory of liability for misappropriation).

remedies for misappropriation may be affected by non–use.[372] In contrast, on its face, the statutory language of the DTSA requires that the plaintiff plead and prove: (1) the existence of one or more trade secrets; (2) that those trade secrets are "related to" goods or services; and (3) that the goods or services are actually used in, or intended for use in, interstate or foreign commerce. Moreover, principles of "jurisdictional sequencing"—which generally require federal courts to determine whether they have jurisdiction before rendering a decision on the merits—may require plaintiffs in trade secret cases to prove these factual predicates before the applicable federal court has power to grant preliminary relief, such as a civil seizure order.[373]

To help determine the meaning of section 1836, federal courts may look at contemporary dictionaries to define what "related to" means, but they are not very helpful. One contemporary dictionary sets forth three definitions for "related": (1) "connected in some way"; (2) "in the same family"; and (3) "belonging to the same group because of shared characteristics, qualities, etc."[374] The latter two definitions are inapt, and the first is unsatisfying given that the purpose of the clause is to ensure that Congress has the constitutional power to regulate the behavior in question, and a mere "connection" may not pass muster. What if the trade secrets comprise only a small part of a good? Should any connection suffice?

In addition, federal courts might consult the statutory context, canons of construction, and legislative history, although these sources are not of much help either in defining what Congress meant by "related to." It is likely, however, that a plaintiff advocating for a broad interpretation will cite the "Sense of Congress" provision of the DTSA[375] and argue that the term should be broadly construed. However, no amount of expressed legislative intent can override constitutional limits on Congress' power, and as *Aleynikov* shows, courts are generally unwilling to interpret limiting language of the sort in the DTSA to reach as broadly as the full scope of Congress' Commerce Clause powers.

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372. There is a significant difference between the "bona fide intent to use" provisions of the Lanham Act and the "intended" language of the DTSA because no federal trademark rights are conferred under the Lanham Act until an intent to use application is perfected.

373. *See* Alan M. Trammel, *Jurisdictional Sequencing*, 47 GA. L. REV. 1099, 1101 (2013) ("Jurisdictional sequencing taps into fundamental questions about the nature and role of subject matter jurisdiction and what, if anything, a court may do before it has established jurisdiction.").

374. RELATED, MERRIAM-WEBSTER DICTIONARY (2016 ed.).

375. Defend Trade Secrets Act, Pub. L. No. 114-153, § 5, 130 Stat. 376, 383–84 (2016).

Furthermore, the nature of the alleged trade secret, as well as whether and how it is used, will obviously affect the jurisdictional analysis. Even though a person of ordinary intelligence may know the meaning of "related to," a factual question that is sure to arise concerns the quantum of relationship that is needed. As an example, it is easy to see how the secret formula for Coca–Cola[376] "relates to" the end-product of a bottle of Coca–Cola, but what if the alleged trade secret is an unused, failed, or discontinued formula for a new beverage?[377] Or what if the alleged trade secret consists of information about employees who work for the Coca–Cola Company, but not the beverage itself? With respect to the as yet unused formula, the DTSA requires proof of intent to use, but this phrase is not defined, raising questions about how such intent will be established and whether it needs to be "bona fide" like the Lanham Act requires. On its face, there does not seem to be any basis to argue that so–called "negative information" can be protected under the DTSA, as negative information is not normally in use.[378]

2. *Ex Parte Civil Seizure Provision*

One implication of the rules and methodologies for statutory interpretation is that the more detailed a statutory provision is, the less likely courts will rely upon extrinsic sources for meaning because they have more words and statutory context to serve as guidance. Thus, it is possible that federal courts will not need to rely much upon extrinsic sources to interpret and apply the ex parte civil seizure provision, which is the lengthiest and most detailed of the DTSA provisions.[379] Additionally, the fact that the civil

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376. *See* Christian Chessman, *A "Source" of Error: Computer Code, Criminal Defendants, and the Constitution*, 105 CALIF. L. REV. 179, 212 (2017) (describing the "legendary barriers" put up to protect the secret formula of Coca-Cola). Of course, the formulation of Coca–Cola has changed over time—for example, it no longer contains cocaine—so it is a misnomer to refer to it as a single "formula." *See* MARK PENDERGRAST, FOR GOD, COUNTRY, AND COCA-COLA (3d ed. 2013). And various sources have published purported versions of the Coca–Cola recipe. *See, e.g.*, *The Recipe*, THIS AMERICAN LIFE https://www.thisamericanlife.org/radio-archives/episode/427/original-recipe/recipe (last visited Dec. 22, 2017).

377. For example, Coca-Cola introduced a new formula for its signature beverage in 1985 that was unofficially dubbed "New Coke," but it quickly restored the old formula in the face of widespread negative reaction. *See* Stephanie Clifford, *Coca-Cola Deleting 'Classic' from Coke Label*, N.Y. TIMES (Jan. 30, 2009), http://www.nytimes.com/2009/01/31/business/media/31coke.html.

378. *See also* Seaman, *supra* note 8, at 351.

379. *See* Goldman, *supra* note 120, at 285 (noting that the ex parte seizure provision makes up over forty percent of the DTSA's text).

seizure provision is also largely a procedural rule means that federal courts, when interpreting and applying it, are likely to apply federal principles.

However, there are reasons why the civil seizure provision may be interpreted and applied with reference to other sources of law. First, the DTSA explicitly requires courts to refer to Federal Rule of Civil Procedure 65 in determining if a civil seizure order should be granted.[380] Second, the DTSA's legislative history and language make clear that the ex parte seizure provision is patterned after similar provisions of the Lanham Act (including creating a cause of action for wrongful seizure),[381] thus inviting federal courts to apply existing precedent under federal trademark law. There are also numerous terms and phrases within the civil seizure provision that are not expressly defined and for which extrinsic sources of information may have to be consulted.

The interpretative challenges of the civil seizure provision begin early when it states that a court may only issue such an order in "extraordinary circumstances" and only for the purpose of seizing "property necessary to prevent the propagation or dissemination of property." The terms "extraordinary circumstances," "property," "propagation," and "dissemination" are not defined in the DTSA (nor in the EEA or UTSA), meaning that federal courts are likely to resort to dictionaries and the context of the DTSA to determine their meanings.

With respect to the requirement of "extraordinary circumstances," one way to interpret the provision is that it is one of those flexible and amorphous terms that Congress intended the federal courts to define over time through case law, as it has done with other forms of interim relief like preliminary injunctions and temporary restraining orders.[382] Another way to interpret the "extraordinary circumstances" language is in light of its context. For instance, one might argue that the "requirements for issuing order" provision, in effect, defines what is meant by "extraordinary circumstances." Specifically, the statutory requirement that federal courts must make a finding that a preliminary injunction or temporary restraining order under Federal Rule of Civil Procedure 65 would be "inadequate to achieve the purpose of this paragraph" before ordering a seizure suggests

380. 18 U.S.C. § 1836(b)(2)(A)(ii)(I) (Supp. IV 2016).

381. *See supra* Part II (describing the legislative history).

382. *See, e.g.*, Winter v. Nat. Res. Def. Council, Inc., 555 U.S. 7, 22 (2008) (holding that a preliminary injunction is an "extraordinary remedy").

that extraordinary circumstances require facts different in nature and magnitude from those required for relief under Rule 65.[383]

Unfortunately, rather than identify "extraordinary circumstances" that justify the grant of an ex parte civil seizure order, the language of the civil seizure provision seems to muddle the acts which constitute trade secret misappropriation and fails to carefully distinguish between the separate and distinct wrongs of "acquisition by improper means" and "disclosure or use in violation of a duty of confidentiality." In so doing, the provision appears to require proof of both more egregious and less egregious acts of trade secret misappropriation than is typically required at common law or under the USTA. It arguably requires more egregious acts by requiring proof of direct misappropriation by "improper means." But then, by not explicitly limiting the actionable circumstances to instances of wrongful acquisition (such as cyber–espionage) or intentional breach of a duty of confidence, it potentially makes any breach of a duty of confidence (or, more troublesome, any conspiracy to breach a confidence,) the basis of a civil seizure order. Under such circumstances, what constitutes "extraordinary circumstances" remains unclear.

Another unclear part of the ex parte civil seizure provision requires that the person against whom the seizure would be ordered have "actual possession of . . . the trade secret; and . . . any property to be seized." Although "property" is not defined in the DTSA, when read in context, it appears to mean that the "property" need not be the trade secrets themselves, but what this "other" property may be is unclear. One reading is that it refers to the tangible property in which some trade secrets reside, perhaps those "goods and services" to which the trade secrets must be related for jurisdictional purposes. Another, broader reading is that "property" refers to any personal property that may be used for the "propagation" or "dissemination" of trade secrets including, for instance, paper copies, digital storage devices, computers, cell phones, and copy machines.

3. *Whistleblower Provision*

Both federal and state law exists to encourage individuals, usually employees of companies, to report suspected violations of law, including

383. *See* OOO Brunswick Rail Mgmt. v. Sultanov, No. 5:17-cv-00017-EJD, 2017 WL 67119 (N.D. Cal. Jan. 6, 2017) (denying an ex parte seizure under DTSA because other legal obligations, including a preservation order requiring delivery of a company–issued laptop at a court hearing rendered a seizure unnecessary).

fraud in government contracting.[384] Known as "whistleblowers," these individuals are often sued for trade secret misappropriation related to their disclosure of information concerning the illegal activity. To limit such claims, the DTSA's whistleblower provision was added late in the legislative process, but it was not subject to a public hearing with testimony on the provision's merits.[385] As a result, there was no opportunity to identify and address potential ambiguities that exist in its wording, leaving potentially significant work for federal courts in the future.

As with most of the "new" provisions of the DTSA, the whistleblower provision contains few statutory definitions, meaning that the general rule of applying common meanings should apply, unless some other canon of statutory interpretation counsels otherwise. However, there are features of the whistleblower provision that suggest that federal courts will have greater leeway to interpret it without reference to state law and to make specialized federal common law to fill any necessary gaps. First, there is the strong federal policy that the whistleblower provision reflects—namely, to facilitate disclosure of illegal conduct.[386] Second, application of the whistleblower provision to all federal and state civil and criminal actions for trade secret misappropriation demonstrates a preemptive federal purpose.[387] This interpretation is bolstered by the language of the DTSA, which states: "Except as provided in section 1833(b) [the whistleblower provision], this chapter shall not be construed to preempt or displace any other remedies, whether civil or criminal, provided by United States Federal, State, commonwealth, possession, or territory law for the misappropriation of a trade secret . . . ."[388]

384. *See, e.g.*, False Claims Act, 31 U.S.C. §§ 3729–33 (2012).

385. The provision was based upon a draft of an article that Peter S. Menell first publicly disseminated in late 2015. *See* Menell, *supra* note 135. Once a draft of his article became public, Professor Menell was contacted by the offices of Senators Leahy and Grassley, and thereafter the language he proposed in his draft paper was added to the DTSA as a "manager's amendment" in January 2016. *See* James Pooley, *What You Need to Know About the Amended Defend Trade Secrets Act*, PATENTLY-O (Jan. 31, 2016), https://patentlyo.com/patent/2016/01/amended-defend-secrets.html. Since this particular amendment was made at an Executive Business Meeting of the Senate Judiciary Committee, and not at a public hearing where testimony could be taken, there is little public legislative history to explain the thinking behind the amendment or its numerous undefined terms. But Professor Menell has recently written an article explaining the provision's intent. *See* Peter S. Menell, *Misconstruing Whistleblower Immunity Under the Defend Trade Secrets Act*, 1 NEV. L.J. FORUM 92 (2017).

386. Menell, *supra* note 135.

387. 18 U.S.C. § 1833(b) (Supp. IV 2016).

388. *Id.* § 1838.

Because the whistleblower provision was adopted with little notice, it is unclear from the legislative history whether its provisions are modeled after other federal laws, including other federal laws governing whistleblower activity. Thus, it cannot be definitively stated that the borrowed statute rule or the *in para materia* canon of construction will be used to interpret the DTSA. However, since some of the terminology that is used in the DTSA's whistleblower provision is similar to terminology used in other federal whistleblower laws, it seems likely that federal courts will at least look at those other laws for guidance. For instance, there is a significant body of jurisprudence under the False Claims Act (FCA) which defines "public disclosure" and "under seal."[389]

A critical part of the whistleblower provision requires that a "disclosure" of trade secret information must be "in confidence" and "solely for the purpose of reporting or investigating a suspected violation of law."[390] However, this terminology is not defined in the DTSA and, in context, seems likely to be interpreted differently than similar language in the FCA which focuses on specific types of disclosures instead of all "public" disclosures. Indeed, the terms "in confidence" and "disclosure" can mean different things in different contexts, even in trade secret cases.[391] Consequently, their meanings in the DTSA are likely to be litigated because failure to comply with the whistleblower provision's requirements means that immunity from trade secret liability does not apply.[392]

Pursuant to general principles of trade secret law, the term "disclosure" is used in at least two senses: (1) to refer to acts that result in the loss of trade secrecy (and thus may create liability for misappropriation); and (2) to refer to the transfer of information between parties in the context of a

389. On the issue of "public disclosure" see, for example, *United States ex rel. Moore & Co. v. Majestic Blue Fisheries, LLC*, 812 F.3d 294 (3d Cir. 2016). With respect to the "under seal" requirement, see, for example, *State Farm Fire & Casualty Co. v. United States ex rel. Rigsby*, 137 S. Ct. 436 (2016). *See also* ROBERT TIMOTHY REAGAN, FED. JUDICIAL CTR., SEALING COURT RECORDS AND PROCEEDINGS: A POCKET GUIDE (2010) (explaining when and how court documents can be sealed).

390. 18 U.S.C. § 1833 (Supp. IV 2016).

391. *See* Sharon K. Sandeen, *Lost in the Cloud: Information Flows and the Implications of Cloud Computing for Trade Secret Protection*, 19 VA. J.L. & TECH. 1, 64–78 (2014) (detailing the different meanings of disclosure under U.S. intellectual property laws).

392. The meaning of "public disclosure" in False Claims Act cases was highly litigated until Congress amended the FCA to more clearly define and limit the meaning of public disclosure. *See* Pub. L. No. 111-148, § 10104(j)(2), amending 31 U.S.C. § 3730(e)(4) (2012).

confidential relationship, an act that usually does not result in a loss of trade secrecy.[393] Given the context and purpose of the whistleblower provision, including its "in confidence" requirement, it seems logical to define "disclosure" in the second sense to require whistleblowers to keep the information of wrongdoing that they "disclose" confidential. But nowhere in the DTSA is "in confidence" specifically defined. Under well–established principles of trade secret law, to disclose things "in confidence" means to share trade secrets only when the recipient of the information is under a duty of confidentiality.[394] However, this may be too strict a requirement for whistleblower purposes as the allowed recipients of the information may not owe a formal duty of confidence, and it may be difficult for the whistleblower to secure an express confidentiality agreement, for instance from law enforcement personnel, prior to disclosing any information.

The clause that requires that a disclosure of trade secret occur "solely" for a specified purpose is also not fully explained in the statutory text. This clause was interpreted narrowly by one court, treating it as an affirmative defense that requires clear proof that the defendant satisfied the requirement before dismissing a complaint[395]—a conclusion with which Professor Peter Menell has expressed strong disagreement.[396] There is little doubt that the whistleblower immunity is a "defense" in the sense that it is an argument that a defendant charged with civil or criminal trade secret misappropriation would likely raise, probably labeling it as an "affirmative defense" in an answer to a civil complaint. The critical question, however, is whether it can also serve as the basis for a quick resolution of a trade secret misappropriation lawsuit, such as pursuant to a motion to dismiss or a motion for summary judgment. This is a problem that federal courts have struggled with concerning the immunity provisions of the Communications Decency Act of 1996,[397] without a definitive answer more than twenty years after that statute was adopted, in part because the applicable scope of the immunity is unclear, but also because the application of immunity is often highly fact–dependent.[398] On one hand, providing defendants an easy and low–cost way to terminate litigation is consistent with the underlying purpose of whistleblower immunity, but because the immunity is based

393. *See* Sandeen, *supra* note 391, at 64.
394. *Id.*
395. Unum Grp. v. Loftus, 220 F. Supp. 3d 143, 147 (D. Mass. 2016).
396. Menell, *supra* note 385.
397. 47 U.S.C. § 230 (2012).
398. *See* Barnes v. Yahoo!, Inc., 570 F.3d 1096, 1109 (9th Cir. 2009) (reversing a lower court order dismissing all of plaintiff's claims).

upon a number of factual predicates that may be disputed, this may prevent an early dismissal of litigation.

The notice and liability limiting parts of the whistleblower provision also lack clarity. Although it is clear that some sort of notice to employees is required, the necessary form of notice is muddled with respect to what employees must be given notice of. The "general" requirement is that: "An employer shall provide notice of the immunity set forth in this subsection in any contract or agreement with an employee that governs the use of a trade secret or other confidential information."[399] But this notice requirement is waived if the employer simply "provides a cross-reference to a policy document provided to the employee that sets forth the employer's reporting policy for a suspected violation of law."[400] Thus, when read in context, it does not appear that the cross–reference must include notice of the immunity, only notice of whistleblowing opportunities.

While federal courts interpreting the whistleblower provision are likely to feel greater freedom to apply federal standards and make federal common law, they should consult applicable state law for meaning because the whistleblower provision uses terms of art that are well known under state trade secrets law. This is particularly true for the definition of a confidential relationship because this body of law may help to define the meaning of "in confidence" in a way that ensures that the sharing of trade secrets with "Federal, State, or local government officials" does not constitute a waiver of trade secret protection. Additionally, because the "Rule of Construction" at the end of the whistleblower section directs federal courts to consider what constitutes "an act that is otherwise prohibited by law, such as the unlawful access of material by unauthorized means," both federal and state law should also be consulted.

4. *Limitations on Scope of Injunctive Relief, Including Enforceability of Noncompete Agreements and the Inevitable Disclosure Doctrine*

The passage of the DTSA creates a potential conflict between the enforcement of federal trade secret rights and state laws governing employee mobility and restrictive covenants. In light of the *Erie* doctrine and the Supreme Court's preference for the law of the forum state when filling gaps, it was likely that federal courts would have applied the employee mobility and restrictive covenant laws of the forum state, but it

399. 18 U.S.C. § 1833(b)(3)(A) (Supp. IV 2016).
400. *Id.* § 1833(b)(3)(B).

was not a foregone conclusion. Without specific language to such effect, federal courts might have interpreted the DTSA to implicitly preempt or preclude application of such laws.[401] Based upon applicable case law discussed in Part III, it would all depend upon whether the state law unduly conflicted with the federal statute.[402]

Fortunately, Congress amended early drafts of the DTSA to include a provision that makes it clear that state law principles must be applied with respect to the issuance of an injunction, thereby explicitly incorporating by reference a body of law that will continue to evolve at the state level.[403] Specifically, this provision states that a court may not grant an injunction that: "(I) prevent[s] a person from entering into an employment relationship, and that conditions placed on such employment shall be based on evidence of threatened misappropriation and not merely on the information the person knows; or (II) otherwise conflict[s] with an applicable State law prohibiting restraints on the practice of a lawful profession, trade, or business."[404] Thus, federal courts are likely to limit the scope of injunctive relief against employees, particularly in cases where there is no evidence of actual or threatened disclosure or use of misappropriated trade secrets.

But there is enough ambiguity in how the injunction provision of the DTSA is written to contend that it also represents a decision by Congress to limit or reject the "inevitable disclosure doctrine" that is recognized in some states.[405] This ambiguity arises from the language that states that an injunction must be "based on evidence of actual of threatened misappropriation and not merely on the information the person knows."[406] In states where application of the inevitable disclosure argument is allowed to substitute for evidence of actual or threatened misappropriation, this language appears to differ from state law. But it might also be read to allow the inevitable disclosure argument to be considered, as long as some other evidence of actual or threatened misappropriation is presented.

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401. *See Professors' 2014 Letter*, *supra* note 160.

402. *Cf.* Kiwanis Int'l v. Ridgewood Kiwanis Club, 627 F. Supp. 1381, 1392 (D.N.J. 1986), *rev'd*, 806 F.2d 468 (3d Cir. 1986) ("In sum, it would do violence to the delicate balance of power struck by the supremacy clause to hold that the tangential federal interest in trademark uniformity preempts the principled state interest in eliminating discrimination which is at issue here.").

403. *See supra* Part II.

404. 18 U.S.C. § 1836(b)(3)(A) (Supp. IV 2016).

405. *See* Elizabeth A. Rowe & Sharon K. Sandeen, *Debating Noncompetes and Trade Secrets*, 33 SANTA CLARA HIGH TECH. L. J. 438, 451 (2017).

406. *Id.*

Another significant issue with respect to limitations on injunctive relief is which state's law counts as the "applicable State law prohibiting restraints on the practice of a lawful profession, trade or business."[407] Ordinarily, one would anticipate that if an employment agreement specifies a particular state's law shall apply, federal courts will honor that choice. But this is complicated by the fact that some states, like California, refuse to enforce contractual provisions that purport to require application of another state's noncompete law to an employee whose site of employment is located within the state.[408] And if the employment agreement is silent, and the employer and current or former employee are located in different states that have different positions on the inevitable disclosure doctrine (e.g., a Maryland resident who works in Delaware),[409] then courts will be compelled to determine which state law will govern.[410] In other words, this provision may continue the lack of uniformity that currently exists under state law with respect to the inevitable disclosure doctrine, but add additional layers of complexity by forcing courts to engage in choice–of–law decisions.

5. Extraterritoriality Provision

The extraterritoriality provision of the DTSA is "new" in the sense that it is not derived from the state law of trade secrecy, but it is also "old" in the sense that it predates the DTSA because it was part of the EEA as originally adopted.[411] Section 1837 provides that:

> This chapter also applies to conduct occurring outside the United States if—
>
> (1) the offender is a natural person who is a citizen or permanent resident alien of the United States, or an organization organized

407. 18 U.S.C. § 1836(b)(3)(A)(II) (Supp. IV 2016).

408. CAL. LAB. CODE § 925 (West 2016).

409. *Compare* LeJeune v. Coin Acceptors, Inc., 849 A.2d 451 (Md. 2004) (rejecting the inevitable disclosure doctrine as a matter of Maryland law), *with* E.I. DuPont de Nemours & Co. v. Am. Potash & Chem. Corp., 200 A.2d 428 (Del. Ch. 1964) (recognizing "inevitable disclosure" as justifying injunctive relief "against a threatened use or disclosure" of a trade secret).

410. *See, e.g.*, First W. Capital Mgmt. Co. v. Malamed, No. 16-CV-1961-WJM-MJW, 2016 WL 8358549 (D. Colo. Sept. 30, 2016), *rev'd on other grounds*, 874 F.3d 1136 (10th Cir. 2017) (applying choice of law rules, concluding that Colorado law rather than California law applied, and granting an "injunction that accomplishes the same result as a noncompete provision").

411. For a discussion of the extraterritoriality issue before the adoption of the DTSA, see Elizabeth Rowe & Daniel Mahfood, *Trade Secrets, Trade, and Extraterritoriality*, 66 ALA. L. REV. 63 (2014).

> under the laws of the United States or a State or political subdivision thereof; or
>
> (2) an act in furtherance of the offense was committed in the United States.

Although this provision has been on the books for over twenty years, there is not much case law interpreting it. Moreover, as Robin Effron has argued, the expansion of this statute to include civil as well as criminal claims of extraterritorial trade secret theft creates serious issues regarding personal jurisdiction over foreign defendants and applicability of the *forum non conveniens* doctrine.[412]

In terms of statutory interpretation, the first subsections of the extraterritoriality provision contain terms that are likely to be reasonably well understood with reference to other provisions of federal law—for example, whether an individual is a U.S. citizen or lawful permanent resident, or whether an organization (e.g., a corporation, partnership, or other collective entity) is organized under U.S. or state law. The criminal law–type language in the second subsection—e.g., "act in furtherance" and "offense" (rather than violation)—suggests that courts will look to comparable federal criminal law to understand these terms, including the law of conspiracy. It is unclear, however, whether criminal law rules of statutory interpretation like the rule of lenity might also be applied.

6. Construction with Other Laws

The construction with other laws provision of the DTSA is significant because it provides that "this chapter shall not be construed to preempt or displace any other remedies, whether civil or criminal, provided by United States Federal, State, commonwealth, possession, or territory law for the misappropriation of a trade secret."[413] This explicit statement, coupled with the nonexclusive jurisdiction of the federal courts, means that state trade secret law (as well as other state law causes of action) will coexist with the DTSA, which makes sense when one considers the limited scope of the DTSA's jurisdictional provision.[414] But not only does the provision state

412. Robin Effron, *Trade Secrets, Extraterritoriality, and Jurisdiction*, 51 WAKE FOREST L. REV. 765 (2016); *cf.* Rochelle Cooper Dreyfuss & Orly Lobel, *Economic Espionage as Reality or Rhetoric: Equating Trade Secrecy with National Security*, 20 LEWIS & CLARK L. REV. 419 (2016) (critiquing expansion and enforcement of the EEA).

413. 18 U.S.C. § 1838 (2012 & Supp. IV 2016).

414. *See supra* Section IV.A.1. Indeed, one empirical study of trade secret litigation in federal court under the DTSA has found that the vast majority of plaintiffs have asserted

that the DTSA does not preempt other remedies, it also states that it does not "displace" state remedies. This can, and probably will be, read as specific direction by Congress that state law should be used when filling gaps in the DTSA, at least with respect to the portions of the DTSA for which there are analogous provisions of state law. In most but not all states, this means the UTSA.[415] Of particular significance is section 7 of the UTSA, which limits available claims for trade secret misappropriation to trade secret claims and breach of contract actions.[416]

B. INTERPRETING AND APPLYING THE "BORROWED" AND DEFINED LANGUAGE

The language of the DTSA that was taken directly from the UTSA, and which is also defined in the UTSA, presents the clearest case for federal courts to look to state law to fill gaps and, possibly, to interpret and apply such language. This is because by adopting the exact (or nearly exact) language of the UTSA, it can be assumed that Congress intended that language to be interpreted and applied in the same manner as it is interpreted and applied by state courts.[417] As the U.S. Supreme Court explained in *Molzof v. United States*:

> [W]here Congress borrows terms of art in which are accumulated the legal tradition and meaning of centuries of practice, it presumably knows and adopts the cluster of ideas that were attached to each borrowed word in the body of learning from which it was taken and the meaning its use will convey to the judicial mind unless otherwise instructed. In such case, absence of contrary direction may be taken as satisfaction with widely accepted definitions, not as a departure from them.[418]

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both federal and state trade secret misappropriation claims. *See* David S. Levine & Christopher B. Seaman, *The DTSA at One: An Empirical Study of the First Year of Litigation Under the Defend Trade Secrets Act*, WAKE FOREST L. REV. (forthcoming 2018) (finding that over 80% of complaints alleging a DTSA claim also allege trade secret misappropriation under state law)

415. *See supra* note 5 (noting that all states except Massachusetts, New York, and North Carolina have adopted some version of the UTSA).

416. UTSA § 7; *see also generally* John Cross, *UTSA Displacement of Other State-Law Claims*, 33 HAMLINE L. REV. 445 (2011).

417. *See supra* Section II.E (legislative history).

418. 502 U.S. 301, 307 (1992) (quoting Morissette v. United States, 342 U.S. 246, 263 (1952)).

The borrowed provisions of the DTSA include: (1) the definition of a "trade secret;" (2) the definition of "misappropriation;" and (3) the definition of "improper means."

Even though the DTSA, like the UTSA, contains a definition section, there will still be significant work for federal courts in deciding the meaning and scope of these terms because the definitions themselves include language that is not clearly defined. In addition, some issues of interpretation remain unresolved at the state level. For instance, the meaning of the independent economic value requirement is neither well–developed nor clear.[419] Furthermore, although amendments to the EEA's preexisting definition of a trade secret were made by the DTSA to conform it more closely to the UTSA's definition, some differences continue to exist and may result in slightly different sets of information being protectable as trade secrets under the DTSA and applicable state law. Also, because the DTSA is technically an amendment to the preexisting EEA, and the EEA is a criminal statute, case law interpreting terms and provisions in the EEA will arguably apply when interpreting the DTSA. Because of the rule of lenity, this sets up a potential conflict between how the EEA and UTSA define the same terms.

1. Definition of "Trade Secret"

The DTSA definition of a "trade secret" is partly a carryover from the EEA and partly a DTSA amendment that more closely aligns its language with the UTSA. It is identical to the definition that is contained in the UTSA with the exception of the scope of applicable "information." Specifically, whereas the UTSA refers to any "information," the DTSA lists only specific types of information that may qualify as a trade secret. Thus, on the face of the statute, it appears that the types of information that are protected by the DTSA are not coextensive with the types of information that are protected under the UTSA. But whether a federal court reads the DTSA's definition to apply to a narrower set of information than the UTSA will depend upon how the court interprets the first part of the definition and whether the rule of lenity will be applied. As a practical matter, it will also depend upon the actual cases presented and whether an argument can be made that they do not involve "financial, business, scientific, technical, economic, or engineering information." For instance, how would information in the form of an idea for a television show or a movie be classified? Is it "business information," or is it literary and artistic information that is not listed in the

419. *See* Johnson, *supra* note 193, at 557–58.

DTSA? Although the listed categories are broad, conceptually there may be information that is not covered by the DTSA that would be covered by the UTSA, particularly since the Commerce Clause provision also requires that the information be "related to a good or service used, or intended for use, in interstate or foreign commerce."

Embedded in the definition of a trade secret is terminology that is well understood under state trade secret law and the UTSA, but that is not defined in the DTSA, including the meanings of: (a) "generally known;" (b) "readily ascertainable;" and (c) "reasonable efforts (measures) to maintain secrecy." If federal courts stick strictly to the language of the DTSA without applying the borrowed statute rule or common law, it is possible that such terms will be interpreted and applied in a manner that is at odds with state law. But if the borrowed statute rule and canon of construction that favors the common law are applied, then the DTSA's definition of a trade secret will be applied consistent with the laws of most, if not all, states.

The potential for non–uniform definitions of key trade secret concepts is not insignificant given the specialized meaning that many of these concepts have under the UTSA and applicable state law. For instance, "generally known" under the UTSA and the common law of trade secrecy is not limited to information that is widely known by members of the public, but can include information that is only widely known within a particular industry.[420] Similarly, the concept of "readily ascertainable" under the UTSA generally means that information can be easily found in publicly available publications or goods,[421] but it is subject to differing applications in practice due to the variability of conceptions of "readily." The rule under the UTSA is that if information is readily ascertainable, then it is not a trade secret in the first instance; if it is not readily ascertainable, then the process of learning the information from public sources may constitute "proper" reverse engineering.

The "independent economic value" requirement is not defined in the UTSA and, indeed, it is not well–understood or theorized in the cases. The UTSA's drafting history suggest this requirement was intended as an important limitation on the scope of protectable information,[422] but it has not been applied satisfactorily in many cases, leaving the federal courts without much meaningful guidance regarding its meaning. However, if the

420. UTSA § 1 cmt.
421. *Id.*
422. Sandeen, *supra* note 4.

federal courts simply apply it as it is written, giving meaning to all of its words, then it may actually be applied as it was intended. In this regard, the statute does not simply require any economic value, but a specific type; namely, "independent" economic value "to others" because of its secrecy.[423]

2. Definition of "Misappropriation"

The definition of misappropriation contained in the DTSA was not in the original version of the EEA, but was added with the other "new" provisions of the DTSA and was borrowed word for word from the UTSA. As in the UTSA, it is a very convoluted provision which defines the following: (1) the various "wrongs" of trade secret misrepresentation, (2) the state of mind that misappropriators must have, and (3) potential third–party liability. Significant portions of the definition of misappropriation rely upon unidentified state law (which in effect are incorporated by reference), including legal and ethical principles that define "improper means" and duties of confidence. This includes principles of contract law which determine when express and implied duties of confidentiality are created and legal principles governing duties of confidence as "a matter of law."

Because application of the statutory definition of misappropriation relies heavily upon concepts of state law—and those concepts are not themselves defined in either the DTSA or the UTSA—consistent with the rules and methodologies previously discussed, it is likely that they will be interpreted and applied in accordance with the law of the forum state. Such a prediction is bolstered by the fact that these concepts are usually based upon the values and ethics of individual states and often define the expectations of parties doing business in those states. But, as occurred in *Community for Creative Non-Violence v. Reid*, the possibility exists that the federal courts may use a general source of law, like common law as expressed in the Restatements, to make the necessary federal common law.

3. Definition of "Improper Means"

The definition of "improper means" in the DTSA, as in the UTSA, includes an illustrative list of criminal and tortious behaviors that, when engaged in for the purpose of either wrongfully acquiring or wrongfully disclosing or using a trade secret, constitute "misappropriation." The precise meaning and scope of "improper means" has not been definitively settled under state law, although many courts and commentators have cited

423. *See* Johnson, *supra* note 193, at 556–58.

E.I. duPont deNemours Co. v. Christopher[424] for the proposition that "improper means" can include behavior that is not itself a crime, a tort, or a breach of contract, as the language of both the DTSA and UTSA seem to require. Thus, trade secret defendants are likely to urge a definition of "improper means" that requires the commission of specific criminal or tortious behaviors, whereas trade secret owners are apt to urge a broader definition. If federal courts apply the law of the forum state, *Christopher* will apply in Texas and other states where it has been recognized with favor. But if they decide to apply the "plain meaning" of the DTSA, a narrower construction is possible. This example suggests that despite the DTSA's objective of uniformity, local variation may continue to exist in some areas.

C. Interpreting and Applying "Borrowed" Language That Is Not Defined

There are numerous provisions of the DTSA that were borrowed from the UTSA but that are not defined in either the DTSA or the UTSA. At the state level, these provisions are subject to interpretation by state courts, and there is a rich body of case decisions defining them. The question is whether and to what extent federal courts applying the same language in the DTSA will consult and apply state jurisprudence on these issues.

Applying the foregoing rules and methodologies, it is hard to predict how federal courts will rule with respect to language borrowed from the UTSA but not defined in the DTSA. On one hand, preference for national uniformity would suggest a desire for a single, national standard, particularly since the legislative history of the DTSA is rife with statements about the need for uniformity in trade secret law.[425] On the other hand, it is clear that the DTSA, particularly the borrowed parts, is based upon both state common law and state statutes that adopted the UTSA. But without defined terms "giving content" to the DTSA, will the federal courts first apply the "plain meaning" of the terms used or look to judicial decisions from states to define the terms? If the latter, will they look to the rules of decision of the forum state, or, like the court did in *Mississippi Band of Choctaw Indians*, the "better reasoned" common law, regardless of whether the forum state has adopted such an interpretation?

In the case of the issues listed below, it is not so much that the DTSA does not "cover" them, but that without any statutory definition or associated commentary (as exists in the case of the UTSA) it is unclear whether federal courts can (and should) interpret those terms anew or apply

424. 431 F.2d 1012 (5th Cir. 1970).
425. *See supra* Part II.

the meaning of those terms as developed under state law. Moreover, to the extent that federal courts decide to apply state law, what happens if there is a conflict in interpretation between various states? In the subsections which follow, we briefly explore what the various approaches may mean for the following issues that are not defined by either the UTSA or the DTSA.

1. *What Constitutes a Duty of Confidentiality and How Are Such Duties Formed?*

Under the law of most states, duties of confidentiality can be created in a variety of ways. They can be defined by statutes, professional norms, or contract. Except where a statute of frauds might apply, the creation of contractual duties of confidentiality can be either written or oral and express or implied–in–fact.[426] Pursuant to principles of equity, they might also be "implied–at–law." However, there is an important distinction under the UTSA and the law of the states that federal courts should keep in mind when examining the confidentiality prong of trade secret misappropriation—namely, a trade secret claim based upon an alleged breach of a duty of confidence versus other tort or contract claims based upon that same duty. The UTSA, and by extension the DTSA, only applies to the misappropriation of trade secrets. Any supplemental claims will be governed by state law, including state law claims that would otherwise be precluded by section 7 of the UTSA. In other words, section 7 of the USTA limits state–law claims for misappropriation of "competitively significant information."[427] However, the DTSA, due to its lack of preemption, does not (on its face) bar non–precluded state law claims being heard in federal court under supplemental jurisdiction.

2. *What Constitutes "Know or Reason to Know," and What Needs to Be Known: The Trade Secrets; The Misappropriation; or Both?*

A largely unexplored and therefore unresolved issue among the states concerns the precise "knowledge" that is needed by an alleged trade secret

426. *See, e.g.*, Nilssen v. Motorola, Inc., 963 F. Supp. 664, 679 (N.D. Ill. 1997) ("While an express confidentiality agreement may certainly suffice to define the duty of confidentiality necessary for action under [the Illinois UTSA], the existence of such an agreement is not a prerequisite to such an action. Rather a duty of confidentiality may be implied from the circumstances surrounding the parties' relationship.") (internal citations omitted).

427. *See* UTSA § 7 cmt. ("This Act . . . applies to a duty to protect competitively significant secret information that is imposed by law. It does not apply to a duty voluntarily assumed through an express or implied-in-fact contract.").

misappropriator, particularly when the alleged misappropriator is a third party who was not involved in the initial misappropriation. Does the alleged misappropriator need to know that actual trade secrets exist, or just that the information in question was the subject of some efforts to keep it private? Must they also understand that their behavior constitutes misappropriation? This relates to the notice function of the reasonable efforts requirement which, according to some courts, should at least put employees and others on notice of the desire for confidentiality and the identity of confidential information.

3. *What Constitutes "Willful and Malicious" and "Bad Faith" for the Award of Punitive Damages and Attorney's Fees?*

Both the UTSA and DTSA authorize an award of exemplary damages for willful and malicious misappropriation. In addition, such conduct may be the basis for awarding attorney's fees under both the UTSA and DTSA. Further, if a plaintiff alleges trade secret misappropriation in "bad faith," it may also be subject to an award of attorney's fees. However, neither the DTSA nor the UTSA attempt to expressly define these requirements.

Federal courts applying the DTSA have several options in interpreting these provisions, not all of which are mutually exclusive. First, they can turn to the body of state law that has developed under the UTSA, which provides considerable guidance as to what types of conduct satisfies these standards.[428] Second, they can apply the (more limited) federal court precedents applying state trade secret law for actions heard under the courts' diversity jurisdiction prior to the DTSA.[429] Third, the courts might seek guidance from other federal statutes, such as the bankruptcy code provision that willful and malicious injury to property cannot be the basis for

428. *See, e.g.*, Agilent Techs., Inc. v. Kirkland, No. CIV. A. 3512-VCS, 2010 WL 610725, at *34 (Del. Ch. Feb. 18, 2010) (finding that the defendants "acted willfully and maliciously with intent to cause commercial harm . . . by using [the plaintiff's] confidential information and trade secrets" and awarding attorney's fees); Boeing Co. v. Sierracin Corp., 738 P.2d 665, 684 (Wash. 1987) (affirming trial court's finding of willful and malicious misappropriation of Boeing's trade secrets and its award of exemplary damages and attorney fees).

429. *See, e.g.*, E.I. DuPont de Nemours & Co. v. Kolon Indus., Inc., No. 3:09-CV-58, 2011 WL 5872895, at *1 (E.D. Va. Nov. 22, 2011) (awarding $350,000 for defendant's willful and malicious misappropriation under Virginia's UTSA); Astro-Med, Inc. v. Plant, No. CIV.A. 06-533 ML, 2008 WL 2883769, at *6 (D.R.I. July 25, 2008), *amended in part*, No. CIV. A. 06-533 ML, 2010 WL 537101 (D.R.I. Feb. 12, 2010) (awarding exemplary damages, attorney's fees, and costs due to defendant's willful and malicious misappropriation of trade secrets under Rhode Island's UTSA).

discharging a debt, in order to determine what mental state is sufficient.[430] For the sake of consistency with the UTSA, some combination of the first two options are most likely to be adopted by federal courts.

4. *What Are the Measures of Actual Loss and Unjust Enrichment? When Are Royalties in Lieu of Injunctions to be Granted, and How Should They Be Calculated?*

Another set of questions relates to monetary remedies available under the DTSA. Both the DTSA and UTSA authorize a successful trade secret plaintiff to recover its actual loss caused by the misappropriation, as well as the misappropriator's unjust enrichment (i.e., disgorgement) to the extent that it is not included in calculations of the plaintiff's loss (in order to avoid double counting). Similar language exists under other federal statutes, including the Copyright Act[431] and the Lanham Act.[432] Again, the federal courts will be confronted with the choice of whether to rely on existing precedent under state trade secret law, on federal court interpretations of other federal intellectual property statutes, or some combination of these options. Federal courts will also be faced with questions about how to determine such monetary remedies, such as whether the principle of apportionment—which is well recognized in patent law—should be applied to prevent a successful trade secret plaintiff from benefitting from innovations and developments unrelated to the plaintiff's trade secret information.[433]

A similar situation exists with respect to awarding royalties in the (presumably rare) event that an injunction is not awarded to prevent future misappropriation. Federal courts could turn to either existing precedent under the UTSA, or they could turn to other bodies of federal law, such as patent law, to help guide this analysis.[434]

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430. 11 U.S.C. § 523(a)(6) (2012).

431. 17 U.S.C. § 504 (2012).

432. 15 U.S.C. § 1117 (2012).

433. *See, e.g.*, Douglas G. Smith, *Application of Patent Law Damages Analysis to Trade Secret Misappropriation Claims: Apportionment, Alternatives, and Other Common Limitations on Damages*, 25 SEATTLE U. L. REV. 821 (2002).

434. *See, e.g.*, Richard F. Dole, Jr., *Statutory Royalty Damages Under the Uniform Trade Secrets Act and the Federal Patent Code*, 16 VAND. J. ENT. & TECH. L. 223 (2014) (arguing that differences between the Patent Act and trade secret laws should counsel against adopting the Patent Act's approach to statutory royalty awards); *cf.* Christopher B. Seaman, *Ongoing Royalties in Patent Cases After* eBay*: An Empirical Assessment and Proposed Framework*, 23 TEX. INTELL. PROP. L.J. 203 (2015) (discussing royalty awards granted in lieu of injunctive relief in patent cases).

D. DEALING WITH ISSUES NOT DIRECTLY ADDRESSED BY THE DTSA

Finally, over the decades since the recognition of trade secret claims in the United States, a number of issues have arisen that are not addressed in either the DTSA or the UTSA. This includes the long–standing common law concept of "general skill and knowledge," which is not mentioned in the text of the DTSA, but which is an important limitation on the scope of trade secret protection.[435] It also includes the law governing the ownership of employee–created trade secrets. There are also other unaddressed issues that are procedural or remedial in nature. They include the following questions:

- Are monetary damages available if there was no use or disclosure of the trade secrets?
- Is irreparable harm presumed from a finding of likelihood of success on the merits?
- Does the reasoning of *eBay*[436] apply to injunctive relief under the DTSA?
- What constitutes a sufficient public policy interest to require royalties in lieu of an injunction?
- When is trade secret misappropriation deemed to be "discovered" such that the statute of limitations begins to run?
- How should conflicts between federal patent, copyright, and trade secret law be resolved?
- Who has standing to bring a claim under the DTSA?

Since the foregoing questions primarily concern the standards for the grant of remedies, including injunctive relief, they are likely to be governed by the extensive body of federal jurisprudence, based upon the Constitution, statutes, and principles of equity, concerning remedies. But as issues arise, federal courts may look toward state law for guidance and, with respect to procedural matters, will have more flexibility to do so.

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435. *See, e.g.*, SI Handling Sys., Inc. v. Heisley, 753 F.2d 1244, 1267 (3d Cir. 1985) ("[A]n employee's general knowledge, skill, and experience are not trade secrets. Thus in theory an employer generally may not inhibit the manner in which an employee uses his or her knowledge, skill, and experience—even if these were acquired during employment.") (internal citations omitted).

436. eBay, Inc. v. MercExchange, L.L.C., 547 U.S. 388 (2006).

V. CONCLUSION

In summary, federal courts will face difficult and complex issues regarding the role of existing federal and state law in interpreting and applying the DTSA. Federal jurisprudence will first be based upon the language of the DTSA itself, as interpreted by the federal courts. But state law will likely play an important role as well, either through statutory interpretation or common law rulemaking as necessary to fill gaps in the DTSA. Based upon the interpretive rules and methodologies previously discussed, possible scenarios for the DTSA include federal courts: (1) adopting the law of the forum state, including the UTSA as adopted and applied in that state; (2) rejecting the law of the forum state in favor of the creation of a federal common law based upon (a) some other state's UTSA law, (b) the UTSA and its commentary, (c) the common law of trade secrecy; or (3) whatever the federal courts think should be the law. No matter what choices the federal courts make, the development of a federal jurisprudence of trade secret law will generate numerous issues in need of further consideration and possible legislative fixes.

OPEN CARS

Lothar Determann[†] *& Bruce Perens*[††]

ABSTRACT

The car of the future will be autonomous, connected and full of innovative information technology features. We may drive it or let it drive us. We know it will be a computer network on wheels. However, we do not know how *open* the car of the future will be. Will it be like a desktop PC upon which we can select either Windows or Linux and choose a video card that meets our specific needs, or as closed as a DVD player with region control?

In our Article, we examine facts and arguments regarding how open the car can, should and may be, as a matter of technology, economics, public policy, and law. To make our points, we will a tale of two cars: it may be open, it may be closed. It may be the best of cars, it may be the worst of cars. We do not aim for an exact prediction regarding the degree of openness for future cars. Rather, we intend to open a public discussion and assist companies in strategic planning by highlighting the economic and policy interests as well as legal rules regarding the opening or closing of automotive designs.

Current law is not holding the open car back. Right–to–repair statutes and competition laws are providing tailwind. Intellectual property laws do not present any insurmountable obstacles to openness. Automotive product and safety rules have not (yet) dictated a path in either direction, open or closed. Onboard diagnostic ports—originally required in the interest of emission control by the California government—have become a gateway to openness and transparency.

However, product liability concerns and the phantom menace of cybersecurity could establish road blocks if manufacturers of open cars are held responsible for risks created by third party software or parts. Automakers may be reluctant to open their products further—or may even decide to lock products down—if they are indiscriminately held responsible for cyberattacks and other harm created by open cars. Sector–specific legislation and regulation may be required if courts take a wrong turn in this respect. The law must play its role to help make the open car the best of cars, and this Article takes a crucial first step in that direction by offering guidance to policymakers, judges, and manufacturers.

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I. INTRODUCTION

The car of the future will be autonomous, connected, and full of innovative information technology features. We may drive it or let it drive us. We know it will be a computer system on wheels. What we do not know is how *open* the car of the future will be. Will it be like a desktop PC upon which we can select either Windows or Linux[1] and choose a video card that meets our specific needs, or as closed as a DVD player with region control which refuses to play movies purchased overseas?[2]

The *open* car supports an aftermarket in which third–party manufacturers produce accessories for the vehicle, including ones not envisioned by the original manufacturer. Such accessories not only include fixtures that can be suction–cupped to the windshield like a GPS or phone, but also accessories that must integrate into the vehicle and its interfaces beyond power, the speakers, and microphone. For example, an interesting

1. Carla Schroder, *Replace the Retiring Windows XP with Linux*, LINUX FOUND. (Apr. 8, 2014), https://www.linux.com/learn/replace-retiring-windows-xp-linux.

2. Robert Silva, *What You Need to Know About DVD Region Codes*, LIFEWIRE (June 4, 2017), https://www.lifewire.com/dvd-region-codes-1845720.

potential "accessory" would be a self–driving computer or accident–preventing sensor that could be purchased separately from the vehicle and plugged into it.

In this Article, we examine facts and arguments regarding how open the car can, should, and may be as a matter of technology, economics, public policy, and law. To make our points, this Article will tell a tale of two cars: one which is open, one which is closed. It may be the best of cars, it may be the worst of cars. This Article does not aim for an exact prediction or recommendation regarding the degree of openness for future cars. Rather, the Article intends to start a public discussion and contribute to the strategic planning of companies by highlighting the economic and policy interests as well as legal rules regarding the opening or closing of automotive designs.

Part II provides an overview regarding the current state of automotive technology and concepts of openness in business models, technology, and law. Part III introduces the enemies of the open car, examines policy considerations for and against openness, and then formulates requirements regarding openness for the open car. Part IV analyzes how current law and regulatory mechanisms accelerate or provide road blocks for open and closed cars. Part V then summarizes our conclusions.

II. CARS AND OPENNESS: NEW PATHS AND CROSSROADS

Open and closed cars will race each other and compete on global markets. They have to drive on the same roads, transport the same kinds of drivers and passengers, satisfy the same expectations regarding price and functionality, comply with the same laws and safety standards, and generate profits for their makers. But they will be products of very different business models and technical architectures—one open and one closed.

A. COMPUTER ON WHEELS

The first computer was integrated in a new automobile in 1968.[3] Computers that manage a vehicle's conformance to pollution emissions standards[4] have been required since the 1980s. Today, a typical car contains

3. *Computer Chips Inside the Car*, CHIPSETC.COM, http://www.chipsetc.com/computer-chips-inside-the-car.html (last visited Sept. 17, 2017).

4. *On-Board Diagnostic II (OBD II) Systems – Fact Sheet / FAQs*, CAL. AIR RES. BD. (Oct. 28, 2015), https://www.arb.ca.gov/msprog/obdprog/obdfaq.htm.

dozens of computers and over 100 million lines of software code.[5] Premium automobiles increasingly assist and even override the driver with systems called "lane assist,"[6] "summon,"[7] "collision avoidance,"[8] and even "autopilot."[9] Computerized systems that assist the driver in avoiding skids during braking are required of all new vehicles in the United States and European Union.[10]

Future vehicles will only become more computerized. Development will progress from driver–assistance systems to fully autonomous automobiles and trucks that take on the role of the driver. These systems will assume primary responsibility for life and property in and around the vehicle, performing as directed with or without a human present. These activities could include transporting children under the orders of their parents without any adult's presence and conveying intoxicated individuals safely[11] without granting them manual control of the vehicle. As the unyielding focus of machines grows to outperform the less reliably attentive human driver, manual driving on public roads could become actionable as a safety violation.[12]

Vehicle computers have euphemistically been called "Electronic Control Units" (ECUs) since the 1980s when manufacturers expected that the customer would distrust having a computer integrated into their car.

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5. Doug Newcomb, *The Next Big OS War Is In Your Dashboard,* WIRED (Dec. 3, 2012, 6:30 AM), https://www.wired.com/2012/12/automotive-os-war/.

6. *Lane Assist*, VOLKSWAGEN, http://en.volkswagen.com/en/innovation-and-technology/technical-glossary/spurhalteassistentlaneassist.html (last visited Sept. 17, 2017).

7. *Summon Your Tesla from Your Phone*, TESLA BLOG (Jan. 10, 2016), https://www.tesla.com/blog/summon-your-tesla-your-phone.

8. John Linkov, *Collision-Avoidance Systems Are Changing the Look of Car Safety*, CONSUMER REP. (Dec. 17, 2015), http://www.consumerreports.org/car-safety/collision-avoidance-systems-are-changing-the-look-of-car-safety/.

9. *Upgrading Autopilot: Seeing the World in Radar*, TESLA BLOG (Sept. 11, 2016), https://www.tesla.com/blog/upgrading-autopilot-seeing-world-radar.

10. *Electronic Stability Control*, SAFERCAR.GOV, http://www.safercar.gov/Vehicle+Shoppers/Rollover/Electronic+Stability+Control (last visited Sept. 17, 2017).

11. Lynn Walford, *How Ignition Interlock Devices Can Stop Drunk Drivers in Their Tracks*, PCWORLD (June 11, 2014, 5:30 AM), http://www.pcworld.com/article/2362002/how-ignition-interlock-devices-can-stop-drunk-drivers-in-their-tracks.html.

12. Jay Samit, *Driving Your Car Will Soon Be Illegal*, TECHCRUNCH (Aug. 11, 2015), http://social.techcrunch.com/2015/08/11/driving-your-car-will-soon-be-illegal/; Jessica S. Brodsky, *Autonomous Vehicle Regulation: How an Uncertain Legal Landscape May Hit The Brakes on Self-Driving Cars*, 31 BERKELEY TECH. L.J. 851 (2016) (exploring potential torts associated with the development of self–driving cars).

Over time, fear of computers was replaced with acceptance and finally desire, as the most attractive features of modern vehicles were implemented through computer control.[13]

The modern car has been dubbed "computer on wheels,"[14] but it has become much more than one computer. Behind the operation of a modern vehicle is neither an "Electronic Control Unit" nor even a single computer, but multiprocessor networks of dozens of small computers which each control a different subsystem and communicate across the rest of the vehicle via two or more private on–board networks. At least one on–board network—often a CAN bus[15] (for Controller–Area Network)—is tasked with the vital operation of the engine, traction components, and brakes and other features that affect the safety of the vehicle, while a second one—sometimes a MOST bus[16] (for Media-Oriented Systems Transport)—handles driver and passenger entertainment.[17]

B. ECONOMIC VISIONS OF CARS AND AUTOMOTIVE BUSINESS MODELS

Consumers select the make and model of automobiles with increasing focus on information technology features: telematics, driver assistance, autonomous driving, connectivity, entertainment, and various safety

13. Doug Newcomb & Alex Colon, *The Best High-Tech Cars of 2017*, PC MAG. (Aug 10, 2017, 10:53 AM), www.pcmag.com/article2/0,2817,2477057,00.asp; David Zax, *How Car Companies Are Trying to Win Back Millennials*, CITYLAB (Sept. 2, 2014), www.citylab.com/design/2014/09/how-car-companies-are-trying-to-make-car-ownership-attractive-to-millennials/379377/.

14. David Sedgwick, *Cars Become Computers on Wheels*, AUTOMOTIVE NEWS (Apr. 21, 2014, 12:01 AM), www.autonews.com/article/20140421/OEM06/304219993/cars-become-computers-on-wheels.

15. *See generally* MARCO DI NATALE ET AL., UNDERSTANDING AND USING THE CONTROLLER AREA NETWORK (2012).

16. *Welcome to the MOST Cooperation*, MOST COOPERATION, http://www.mostcooperation.com/ (last visited Sept. 17, 2017) ("MOST – Media Oriented Systems Transport – is the de-facto standard for multimedia and infotainment networking in the automotive industry.").

17. *See* General Motors LLC, Comment Letter on Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies 6 (Mar. 27, 2015), https://www.copyright.gov/1201/2015/comments-032715/class%2017/General_Motors_class17_1201_2014.pdf; *see also* Jim Motavalli, *The Dozens of Computers That Make Modern Cars Go (and Stop)*, N.Y. TIMES (Feb. 4, 2010), www.nytimes.com/2010/02/05/technology/05electronics.html; Robert N. Charette, *This Car Runs on Code*, IEEE SPECTRUM (Feb. 1, 2009, 5:00 AM), http://spectrum.ieee.org/transportation/systems/this-car-runs-on-code.

features.[18] This gets entrepreneurs thinking about new ways to earn profits in the automotive sector: companies with a background in online services may envision the car of the future as a data generator that they can give away free of charge in return for behavioral data that they can monetize for advertising and other purposes.[19] Social media companies may push for a socially connected car[20]—the next platform after the personal computer, smartphone, and virtual reality headset. Companies with strong content portfolios may view the car as a platform to distribute for video and audio material.[21] Traditional car manufacturers may continue to focus on driving enjoyment (which Volkswagen famously marketed as "Fahrvergnügen"[22]) rather than electronic distractions.[23]

Different economic visions and business plans come with different preferences regarding technological openness. More likely than the extremes, future cars will more likely fall somewhere in the middle between completely open or locked–down. They will be open in some respects, closed in others. Manufacturers might compete on openness so that consumers can choose between more open and closed products.

The smartphone and its wearable progeny may have conclusively won the battle to be the customer's ever–present electronic assistant, unless a day comes when networking is embedded in the human body.[24] It is not yet known whether future automobiles can profitably share the role of digital

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18. THOMSON REUTERS, THE STATE OF INNOVATION IN THE AUTOMOTIVE INDUSTRY 2015 (2015), http://ip-science.thomsonreuters.com/ip/SOI-Automotive-Industry-Report.pdf.

19. MCKINSEY & CO., CAR DATA: PAVING THE WAY TO VALUE-CREATING MOBILITY (2016), https://www.mckinsey.de/files/mckinsey_car_data_march_2016.pdf.

20. RICHARD VIERECKL, JÖRG ASSMANN & CHRISTIAN RADÜGE, STRATEGY&, IN THE FAST LANE: THE BRIGHT FUTURE OF CONNECTED CARS (2014), http://www.strategyand.pwc.com/media/file/Strategyand_In-the-Fast-Lane.pdf.

21. *Nuance Launches Next-Generation Dragon Drive*, SPEECH TECH. (Nov. 13, 2013), http://www.speechtechmag.com/Articles/News/Speech-Technology-Digest/Nuance-Launches-Next-Generation-Dragon-Drive---93249.aspx.

22. ClassicCommercials4U, *Volkswagen Fahrvergnugen Ad from 1990*, YOUTUBE (July 13, 2009), https://www.youtube.com/watch?v=eOnne-90CLI.

23. Some automakers release "retro" cars with mixed results. *See* Ben Stewart, *6 Retro Flops, and 6 Concept Cars That Should Have Replaced Them*, POPULAR MECHANICS (June 1, 2016), www.popularmechanics.com/cars/g1287/6-retro-flops-and-6-concept-cars-that-should-have-replaced-them/.

24. *See, e.g.*, Maurice E. Stucke & Ariel Ezrachi, *How Digital Assistants Can Harm Our Economy, Privacy, and Democracy*, 32 BERKELEY TECH. L.J. (forthcoming 2017) (describing the potential dangers with increasingly sophisticated digital assistants like Siri).

assistant with a more personal device.[25] Vehicles will supplement the "assistant" functions currently provided by smartphones by offering additional senses and outputs, whether the computer using them is worn or driven.

Today, smartphone applications remind you where you parked.[26] Some proactively prompt you and point out nearby restaurants and convenience stores.[27] They access your calendar and suggest routes to your next appointment.[28] Such applications are able to use even more specific data—such as the time of day and a history of restaurants you have parked at—in order to identify you as a likely customer and present you with a customized prospect of visiting a nearby restaurant. App manufacturers will sell this service to restaurants, and the ones that pay will likely be preferred, if not exclusively recommended.

The vehicle of the future may be equipped to sense medical data[29] noninvasively in order to tell if the driver is intoxicated, sleepy, or ill and to deny control of the vehicle or call for help appropriately. Infrared cameras can sense body temperature and respiration parameters[30] such as rate, depth, and regularity, and even the driver's emotions.[31] Chemical sensors can detect alcohol and perhaps other chemicals on the breath. If a vehicle carries such medical sensors, the vehicle–connected computer might also use the

25. Bill Howard, *Car Navigation Is a Ripoff. Here's Why*, EXTREMETECH (Sept. 15, 2011, 3:31 PM), http://www.extremetech.com/extreme/96175-car-navigation-is-a-ripoff-here's-why.

26. Jon Russell, *Google Now Adds Parking Reminder*, NEXT WEB (Apr. 30, 2014), http://thenextweb.com/google/2014/05/01/google-now-gets-parking-detector-remind-left-car/.

27. Danny Sullivan, *Google Now Adds 70 New Apps, Including Zipcar & Restaurant Bill Pay Via OpenTable*, SEARCH ENGINE LAND (Apr. 28, 2015, 2:06 PM), http://searchengineland.com/google-now-new-apps-219906.

28. Paul Sawers, *Waze for Android Taps Your Calendar Events to Tell You When to Leave Based on Traffic Conditions*, VENTUREBEAT (Mar. 10, 2016, 6:43 AM), http://venturebeat.com/2016/03/10/waze-for-android-taps-your-calendar-events-to-tell-you-when-to-leave-based-on-traffic-conditions/.

29. Press Release, Invents Co., The Emergency Medical Assist": A Sensor System Designed for Automobiles That Monitors the Vital Signs of the Driver (Apr. 9, 2016), https://invents.newswire.com/news/the-emergency-medical-assist-a-sensor-system-designed-for-automobiles-9901699.

30. Jin Fei & Ioannis Pavlidis, *Analysis of Breathing Air Flow Patterns in Thermal Imaging*, PROC. 28TH IEEE EMBS ANN. INT'L CONF. 946–52 (2006).

31. Elisa Campo, *Thermal Imaging Cameras to Read Human Emotions*, IEN EUR. (Nov. 5, 2015), https://www.ien.eu/article/thermal-imaging-cameras-to-read-human-emotions/.

data from them to assess whether the driver and passengers are hungry and monetize that as an advertising opportunity. It might assess sleepiness and point out a motel, asking if it should make a reservation, and completing the booking if approved.[32] It will certainly be aware of the amount of remaining fuel and will point out gas or recharge stations as appropriate.[33]

C. Different Speed of Obsolescence of Automobiles and Computers

Consider the time until obsolescence of a smartphone[34] versus that of a modern automobile. A 1950s car, maintained appropriately, can still operate safely and even be fun to drive. In contrast, the owner of that automobile is not likely to keep a smartphone for longer than four years. Moore's law[35] still applies to computers, which means that the CPU speed and memory capacity of new smartphones doubles close to annually. Thus, while phones in 2006 did not have good cameras and barely had practical web browsers, today's phones integrate excellent cameras, can easily present not only web pages but feature films, and (with server support over the internet) can understand your voice and reply appropriately.[36]

Integrated navigation systems in automobiles have been a technical and economic failure, in that they are generally supplanted by a more capable program in a smartphone within a few years of a new automobile's sale, and the user generally abandons use of the onboard system.[37] Integrated entertainment systems that offer network services and apps suffer from similar problems: they are supplanted by more powerful apps on an up–to–date smartphone. From then on, the user employs the on–board entertainment system mainly for the Bluetooth path that connects a

32. Eric Ravenscraft, *Google Now Adds Gas Stations On Your Route Cards*, LIFEHACKER (Feb. 23, 2015, 7:30 AM), http://lifehacker.com/google-now-adds-gas-stations-on-your-route-cards-1687419012.

33. *Id.*

34. Chris Ely, *The Life Expectancy of Electronics*, CONSUMER TECH. ASS'N (Sept. 16, 2014), https://www.cta.tech/News/Blog/Articles/2014/September/The-Life-Expectancy-of-Electronics.aspx.

35. Chris Mack, *The Multiple Lives of Moore's Law*, IEEE SPECTRUM (Mar. 30, 2015, 3:00 PM), http://spectrum.ieee.org/semiconductors/processors/the-multiple-lives-of-moores-law.

36. Casey Phillips, *How Smartphones Revolutionized Society in Less Than a Decade*, GOV'T TECH. (Nov. 20, 2014), http://www.govtech.com/products/How-Smartphones-Revolutionized-Society-in-Less-than-a-Decade.html.

37. Howard, *supra* note 25.

smartphone to an automobile's speakers and provides a speakerphone microphone for telephone calls.[38]

For a time, there can be software updates to the on–board computers of vehicles. However, auto manufacturers charge prices approaching that of a new smartphone for only a few year's updates, and manufacturers (with the notable exception of Tesla[39]) have historically not added many new software features to their years–old automobile models, preferring to use the desire for features to drive the sale of new automobiles.[40]

Within a few years, the computer hardware behind a navigation or entertainment system is typically eclipsed by the capability of newer models and further software updates must be limited to the capabilities of the old system. Auto manufacturers have not, so far, offered new electronics to upgrade old cars. This, again, is considered an opportunity for a new vehicle sale.[41]

But this paradigm of old vehicles continuing to contain old computers for their entire useful lives will not be sufficient to support the advent of autonomous vehicles. The technology of autonomous vehicles will go through very rapid development throughout the next several decades. For at least the next decade, a system only three years old can be expected to significantly trail the capabilities of newer systems, to an extent great enough that its capability for safe operation can be considered unacceptable when compared to a new system. Thus, it is likely that manufacturers will integrate planned obsolescence into these systems so that the autonomous feature is deactivated some years after purchase unless the system hardware has been updated, and the autonomous feature will be deactivated within months if the owner somehow misses software updates. This places an end–date on the occurrence of events that would lead to liability of the manufacturer for a particular software and hardware version.[42] Rather than

38. David Pogue, *Why the Upgrade Cycle Will Never End,* SCI. AM. (June 1, 2015), https://www.scientificamerican.com/article/why-the-upgrade-cycle-will-never-end/.

39. Fred Lambert, *Tesla Roadster 3.0 Battery Upgrade (R80) Are Finally Starting to Arrive—~340 Miles of Range*, ELECTREK (July 8, 2016, 5:43 AM), https://electrek.co/2016/07/08/tesla-roadster-3-0-battery-upgrade-r80/.

40. Pogue, *supra* note 38.

41. *Id.*

42. Tesla is able to continue to improve its computer–rich model *S* and *X* automobiles because their owners have paid around $100,000 per car and are willing to put in $20,000 per upgrade. *See* Fred Lambert, *Tesla Now Offers Almost $20,000 in Software-Upgradable Options When Buying a Vehicle*, ELECTREK (Oct. 26, 2016, 8:23 AM), https://electrek.co/2016/10/26/tesla-now-offers-almost-20000-in-software-upgradable-

sell autonomous vehicles, manufacturers could lease them, with the lease payment including periodic system upgrades to keep the autonomous function up to the state of the art, or just offer cars on a subscription basis with a limited time use of hardware included in the service, adding Car–as–a–Service (CaaS) offerings to SaaS, PaaS, IaaS,[43] and other phenomena in the cloud economy.

D. PLACE FOR THE DRIVER IN THE OPEN CAR?

Pilots have to be checked out in airplane makes and models before they can fly a new plane solo.[44] Pilot training and license requirements for manned and unmanned aircraft and flying in visual and instrument flight conditions vary greatly. With respect to automobiles, driver license schemes differentiate between permissions to drive trucks, motorcycles, and cars, but not (yet) within the category "passenger car." This may have to be reconsidered as cars get more complicated, drivers may become less involved in the details of operating a car and different models may function very differently, because the driver of an older automobile with manual gear shifting requires a different skillset than the operator of an autonomous car.

Another question to consider is whether the autonomous driving function of an automobile must be one manufactured only by the manufacturer of that vehicle and nobody else. Traditional auto manufacturers, daunted by their corporate inexperience with autonomous vehicles and fear of tremendous liability as they take on the role of driver for the first time, may argue that only they know how to integrate such a function safely into their own vehicles. However, it is technically possible to create a standard interface for autonomous driving systems, providing a standard set of sensors and vehicle controls, a standard space for the computer, and standard connectors to interface to it. The sensors integrated into the vehicle can themselves be replaced with newer models that include

options-when-buying-a-vehicle/. Tesla has offered a $29,000 battery upgrade for their *Roadster* models even though there are only about 2,000 in existence. This strategy assures Tesla purchasers that their vehicle will be protected from obsolescence for a longer period than vehicles of more conventional automakers. But can Tesla sustain this practice for the affordable, mass-market model 3? It is not yet clear whether a manufacturer of more economical vehicles could continue to upgrade computers and software at the price points the owners of such vehicles could pay.

43. *See* Eamonn Colman, *When to Use SaaS, PaaS, and IaaS*, COMPUTENEXT (Aug. 27, 2013), https://www.computenext.com/blog/when-to-use-saas-paas-and-iaas/.

44. *Private Pilot Requirements*, FIRSTFLIGHT, http://www.airbus.com/support/training/flight/flight-training-with-a350-xwb/ (last visited Sept. 17, 2017).

new features, but at longer intervals than the autonomous driving computer and while continuing to use the same wires and connectors to interface to the autonomous driving computer. Programmer George Hotz has already adapted his own creation of a self–driving computer to the existing interfaces of some modern cars, and was able to capitalize *comma.ai*, a new startup, for $3.1 million on the strength of that demonstration.[45]

Such interoperability would support more competition in the production of autonomous driving systems, potentially reducing their prices and increasing their capability. It is likely that the producers of these systems can be held to the same safety and testing standards as the automobile manufacturer. But this would require that manufacturers be willing to implement a standard, rather than exclusively own the autonomous system for their vehicles. Manufacturers might not be willing to take that step without government encouragement.

Such systems would have expiration dates for both the software and hardware, so that the system would disable the autonomous function once it is past a mandatory replacement date. This would prevent the use of "junker" computers to drive autonomously past the date when they could be expected to perform with a level of safety comparable to more modern units, just as corporations have to remove computers with Window 7 due to its known security issues and upgrade to a new version.[46]

The addition of a capability[47] for the autonomous driving computer to be replaced using standards that allow for multiple manufacturers potentially addresses the economic problem of continuous upgrades. An owner would have a competitive market in which to purchase autonomous driving systems, and thus lower prices. Old or obsolete autonomous driving computers could be removed from a vehicle, leaving it fully functional to

45. Danny Yadron, *This 26-Year-Old Hacker Can Make A Self-Driving Car, But Can He Take On Tesla?*, GUARDIAN (Apr. 5, 2016), https://www.theguardian.com/technology/2016/apr/05/george-hotz-comma-self-driving-car-tesla-elon-musk.

46. Liam Tung, *Microsoft: Window 7 In 2017 Is So Outdated That Patches Can't Keep It Secure,* ZDNET (Jan. 17, 2017, 2:34 PM), http://www.zdnet.com/article/microsoft-windows-7-in-2017-is-so-outdated-that-patches-cant-keep-it-secure/.

47. Rob Freeborn, *How Much Does It Cost to Replace a Vehicle Computer*, ISEECARS, https://blog.iseecars.com/how-much-does-it-cost-to-replace-a-vehicle-computer/ (last visited Sept. 17, 2017); *see also* Cassandra E. Havens, *Saving Patent Law from Competition Policy and Economic Theories*: Kimble v. Marvel. Entertainment LLC, 31 BERKELEY TECH. L.J. 371, 376 (2016) (describing generally how "antitrust laws protect market competition").

be human–driven. A new owner of a used car could choose to add an autonomous function or not.

E. OPEN DESIGNS AND LOCKS

The first exclusion mechanism in an automobile was the door lock, an advertised feature since 1915, although it did not become universal until the 1960s. Door and starter/ignition locks operate in the interest of the vehicle owner, protecting the owner's property. More recently, exclusion mechanisms which operate in the interest of the manufacturer and contrary to the interest of the owner[48] have been added to modern vehicles, creating and protecting monopolies for the manufacturer. Such restrictions prevent the addition of some options and accessories by anyone other than a manufacturer–authorized dealer. For example, one modern American SUV model allows the physical installation of an upgraded entertainment system, but it will not function and interoperate with the rest of the vehicle's systems until authorized using a device available only to the dealer.[49]

Manufacturers have many options to design their products in an open way, or in one that mandates that parts and accessories be exclusively made or authorized by the manufacturer. For example, manufacturers can adopt and help to set standards for communication protocols and physical connectors that allow car owners to swap out original radios, navigation systems, and other features for preferred aftermarket parts.[50] Or, to preferentially support sales of their own products and those of their exclusively–licensed vendors, manufacturers can prevent retrofitting, tuning, and other modifications by encrypting their internal communications, using proprietary communication protocols, and implementing nonstandard physical connectors.[51] To this end, manufacturers can withhold documentation and manuals from the end–user

48. Pete Bigelow, *Automakers to Gearheads: Stop Repairing Cars*, AUTOBLOG (Apr. 20, 2015, 10:31 AM), http://www.autoblog.com/2015/04/20/automakers-gearheads-car-repairs/.

49. jim_87, Comment to *Uconnect 5.0 Upgrade to 8.4AN (2014 Cherokee) - Part Deux*, JEEP CHEROKEE FS. (Apr. 18, 2015, 5:59 PM), http://jeepcherokeeclub.com/385-jeepcherokeeclub-com-how-s/123826-uconnect-5-0-upgrade-8-4an-2014-cherokee-part-deux.html.

50. Jason Torchinsky, *Carmakers Want to Use Copyright Law to Make Working on Your Car Illegal*, JALOPNIK (Apr. 21, 2015, 12:05 PM), http://jalopnik.com/carmakers-want-to-make-working-on-your-car-illegal-beca-1699132210

51. Niels Koch, *The Car Entertainment System*, *in* NEW TRENDS AND DEVELOPMENTS IN AUTOMOTIVE SYSTEM ENGINEERING (Marcello Chiaberge ed., 2011).

and makers of aftermarket modifications, so that interoperation with their on–board electronics is impossible without extensive reverse–engineering.

F. OPEN AND PROPRIETARY BUSINESS MODELS

Most of us associate the attribute "open" with positive connotations. In open societies, individuals are free to decide, governments are transparent, accountable to individuals and tolerant.[52] The federal government and others promote open governance.[53] In the information technology industry, programmers fervently promote open source code licensing.[54] Calls for open borders, open markets, open standards, open platforms, open data, and open robotics have become louder.[55] Open stands for accessible, transparent, and free from restraints. Proprietary stands for secrecy, with the information necessary to interface to a device made opaque and withheld from the user and third–party vendors, and protected with trade secret law and technical protection measures fortified by the Digital Millennium Copyright Act ("DMCA").[56]

1. Razors, Razorblades, and Other Consumer Products

Manufacturers of products that require consumable supplies often sell the main product as a "loss leader," sometimes at a lower price than the cost of production and distribution, and the consumable at a markup that more than recovers the cost of the main product. This is called the razors–and–blades paradigm after the classic product sold using it.[57] The razors–and–blades paradigm is used, for example, in selling consumer and small–

52. KARL POPPER, THE OPEN SOCIETY AND ITS ENEMIES (1945).

53. White House Memorandum for the Heads of Exec. Depts. & Agencies (Jan. 21, 2009), https://obamawhitehouse.archives.gov/the-press-office/transparency-and-open-government (identifying the Obama administration's commitment "to creating an unprecedented level of openness in Government").

54. Lothar Determann, *Dangerous Liaisons—Software Combinations as Derivative Works? Distribution, Installation and Execution of Linked Programs under Copyright Law, Commercial Licenses and the GPL*, 21 BERKELEY TECH. L.J. 1421 (2006); Christian Chessman, *A "Source" of Error: Computer Code, Criminal Defendants, and the Constitution*, 105 CALIF. L. REV. 179, 223 (2017) (calling for the development of government funded open–source programs in criminal trials).

55. M. Ryan Calo, *Open Robotics*, 70 MD. L. REV. 571, 577 (2011); JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET—AND HOW TO STOP IT 3–5 (2008); Jonathan L. Zittrain, *The Generative Internet*, 119 HARV. L. REV. 1974, 1976 (2006); 4 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.03[F][5] (2013).

56. 17 U.S.C. § 1201 (2012).

57. *See generally* Randal C. Picker, *The Razors-and-Blades Myth(s)*, 78 U. CHI. L. REV. 225 (2011).

business printers, with low costs for the printer while the ink in cartridges for the same printer sells for a higher price by weight than gold.[58] Companies that pursue such business models cannot afford to open interfaces or connectors, as this would allow price competition upon the supplies. They rely on locks, proprietary designs, intellectual property rights, and other barriers to prevent third parties from selling consumables, parts or compatible products. Makers of video game consoles have fought prolonged legal battles to keep control over games that can be played on their consoles[59] or platforms to which their operating systems and games can be ported.[60]

The razors–and–blades paradigm remains relevant in the digital era because manufacturers do not stop earning revenue when they sell their hardware. For example, they can keep a lock on online stores that purchasers of smartphones must use to add applications.[61]

2. *Manufacturing Equipment: Ingredients and Parts*

Somewhat similar to the razors–and–blades models in the consumer space, makers of manufacturing equipment have been trying to lock down aftermarkets for ingredients or parts. The United Shoe Machine Corporation tried to require buyers of its machines to also purchase its leather.[62] The International Salt Company tried to require buyers of its machines to purchase its salt.[63] Kodak and Xerox have been trying to prohibit, prevent or discourage unaffiliated companies to supply parts, add–on products, or repair and maintenance services.[64]

3. *Personal Computers and Software*

As in other markets, some computer manufacturers have also tried to keep their product environments closed. In the 1930s, for example, IBM

58. *See* Lexmark Int'l, Inc. v. Static Control Components, Inc., 387 F.3d 522 (6th Cir. 2004).

59. *See* Sega Enters. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992).

60. *See* Sony Comput. Entm't, Inc. v. Connectix Corp., 203 F.3d 596 (9th Cir. 2000).

61. Larry Dignan, *Apple's App Store Revenue Tops $28 Billion Mark, Developers Net $20 Billion,* ZDNET: BETWEEN THE LINES, (Jan. 5, 2017, 12:08 PM) http://www.zdnet.com/article/apples-app-store-2016-revenue-tops-28-billion-mark-developers-net-20-billion/.

62. *See* United Shoe Mach. Corp. v. United States, 258 U.S. 451 (1922).

63. *See* Int'l Salt Co. V. United States, 332 U.S. 392 (1947).

64. Joseph P. Bauer, *Antitrust Implications of Aftermarkets*, 52 ANTITRUST BULL. 31, 34 (2007).

tried to require buyers of its punch card sorting machines to buy the actual cards also from IBM, but was challenged on similar antitrust grounds as companies with other tying models.[65]

But, more than in other industries, companies in the information technology sector have also used openness to their competitive advantage and benefited from network effects. In the 1980s, Apple and Microsoft competed in the relatively new market for personal computing products. Apple implemented exclusivity on the hardware and operating system combination on Macintosh computers: you could neither install MacOS on another manufacturer's hardware nor could you run Windows upon Macintosh hardware. Microsoft, in contrast, developed an operating system that was often purchased separately from the hardware and was capable of being installed on commodity PCs from many different manufacturers. Microsoft prevailed in the personal computing market.[66]

Microsoft's Office file formats were not documented to other manufacturers so that an exhaustive reverse–engineering process was responsible for competing programs to make use of the files. When Microsoft tried to extend its market power in the personal computer operating system and office application software sector to new application fields, the U.S. government intervened on antitrust grounds. It challenged Microsoft regarding its attempt to acquire Intuit Inc. and to bundle its Internet Explorer browser application with the Windows operating system.[67]

More recently, Apple created an "app store" for iOS phones and tablets with tremendous economic success. The app store involves a relatively open model that other providers including Microsoft, Blackberry, and Google are trying to emulate with more or less success.[68] Consumers find a computer or software product that is interoperable and has an open market for apps and accessories more valuable than a locked–down product. With interoperable computers or smartphones, consumers can connect to specialist software applications, content (including on web and mobile sites), printers, and sensors (such as heart rate monitors or step counters).

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65. IBM Corp. v. United States, 298 U.S. 131 (1936); *see also infra* note 70.

66. Matt Kapko, *History of Apple and Microsoft: 4 Decades of Peaks and Valleys*, CIO (Oct. 7, 2015, 5:00 AM), www.cio.com/article/2989667/consumer-technology/history-of-apple-and-microsoft-4-decades-of-peaks-and-valleys.html.

67. U.S. v. Microsoft*: Timeline*, WIRED (Nov. 04, 2002, 12:00 PM), www.wired.com/2002/11/u-s-v-microsoft-timeline/.

68. Google v. Apple*: Which Will Be Better in 11 Years*, CNBC (Aug. 19, 2015), http://www.cnbc.com/2015/08/19/google-vs-apple-which-will-be-better-in-11-years.html.

Manufacturers of information technology products cannot typically succeed if they completely lock down their products. Yet, the manufacturers are also driven to exercise a degree of control in order to extract license fees, royalties or other consideration for access to their platforms.

4. Automotive Sector

In the automotive sector, the battle over openness and locks on the "aftermarket,"—the sale of accessories after the original purchase of an automobile—has been focused on hardware parts for close to a century.[69] Courts have required manufacturers allow some degree of openness regarding aftermarkets while also giving them some leeway under the rule of reason, applying similar rules of the road to other cases of consumer products and manufacturing equipment.[70] But as automobiles become more computerized, their manufacturers are finding the rules of information technology markets increasingly relevant.

Manufacturers are implementing software locks to prevent the operation of aftermarket accessories without the automobile manufacturer's authorization. But they feel market pressures towards openness as well because consumers select their car on the basis of whether it allows a seamless connection to their favorite smartphones, and fleet managers may consider whether a car connects to their preferred telematics system when they look to add to or replace their fleet. Therefore, car manufacturers suddenly find themselves in a similar situation to information technology providers: connectivity, interoperability, and openness are no longer just a threat to revenue opportunities on aftermarkets but a differentiator and essential success factor on primary and aftermarkets. Most leading car

69. *See* Morris A. Cohen, Narendra Agrawal & Vipul Agrawal, *Winning in the Aftermarket*, HARV. BUS. REV. (May 2006), https://hbr.org/2006/05/winning-in-the-aftermarket.

70. Bauer, *supra* note 64; *see also, e.g.*, Pick Mfg. Co. v. Gen. Motors Corp., 80 F.2d 641 (7th Cir. 1935), *aff'd*, 299 U.S. 3 (1936) (per curiam); Crappone, Inc. v. Subaru of N. Eng., Inc., 858 F.2d 792 (1st Cir. 1988); Mozart Co. v. Mercedes-Benz of N. Am., 833 F.2d 1342 (9th Cir. 1987); Metrix Warehouse, Inc. v. Daimler-Benz AG, 828 F.2d 1033 (4th Cir. 1987); Sherman v. British Leyland Motors, Ltd., 601 F.2d 429 (9th Cir. 1979); Heatransfer Corp. v. Volkswagenwerk, A.G., 553 F.2d 964 (5th Cir. 1977); *see also* Bob Maxfield, Inc. v. Am. Motors Corp., 637 F2d 1033 (5th Cir. 1981); Dealer Comput. Servs., Inc. v. Ford Motor Co., No. Civ.A. H-06-175, 2006 WL 801033 (S.D. Tex. Mar. 28, 2006).

manufacturers are already trying to create developer ecosystems similar to mobile app platforms.[71]

When we look at the car as a "multicomputer on wheels,"[72] we must not forget what has traditionally been its primary functionality: transportation. Computers without wheels do not invoke the same safety and environmental concerns as cars. Car emissions threaten global climate. Car safety deficiencies threaten life and limb of drivers, passengers, cyclists and bystanders. But we should also not take for granted that cars must be more locked down than computers without wheels due to environmental and safety concerns. In fact, environmental and safety concerns also present strong arguments for openness, or at least disclosure.[73]

A manufacturer can disclose all of the source code of its software—with all patent and copyrights reserved—to allow third parties to audit proprietary software for safety issues. Disclosure scares non–computer–professionals because they believe that it can lead to the discovery of security flaws by those who would exploit them criminally. However, properly–written software remains secure even if a criminal knows every

71. TIBCO, THE CONNECTED CAR FINDING THE INTERSECTION OF OPPORTUNITY AND CONSUMER DEMAND (2016), https://www.mashery.com/sites/default/files/fields/field_file_pdf/whitepapers/wp-mashery-the-connected-car.pdf.

72. David Sedgwick, *Cars Become Computers on Wheels*, AUTOMOTIVE NEWS (Apr. 21, 2014, 12:01 AM), www.autonews.com/article/20140421/OEM06/304219993/cars-become-computers-on-wheels.

73. For example, the Volkswagen diesel emissions scandal was only found due to scientific research which involved one of the automobiles. *See infra* Section III.B.; Jack Ewing, *Researchers Who Exposed VW Gain Little From Success,* N.Y. TIMES (July 24, 2016), https://www.nytimes.com/2016/07/25/business/vw-wvu-diesel-volkswagen-west-virginia.html.

detail of its operation.[74] Security researchers[75] can identify safety and security concerns more easily when the software of open cars is disclosed. They can flag security vulnerabilities and cheating regarding emission tests. Easy access for security researchers more than balances out the capability of computer criminals to glean more information from disclosed software. Computer scientists have thus in general only accepted cryptography and other security–critical software that are fully disclosed, because it is too easy to hide back–doors in opaque software. Computer scientists insist that the mathematical algorithms in cryptography software must be fully documented and must survive intensive public examination without the discovery of flaws. Open source software, which is obviously disclosed, has been found in practice to be at least as secure as locked–down software—if not more secure.[76]

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74. Karen Scarfone, Wayne Jansen & Miles Tracy, *Guide to Server Security*, NAT'L INST. STANDARDS & TECH. (July 2008), http://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-123.pdf ("System security should not depend on the secrecy of the implementation or its components."). The concept of security through obscurity goes back to locksmith Alfred Charles Hobbs, who in 1851 demonstrated the vulnerabilities of locks to the public, claiming that thieves had already learned them. Roman Mars, *In 1851, A Man Picked Two Unpickable Locks and Changed Security Forever*, GIZMODO (Apr. 17, 2015, 7:40 PM), http://gizmodo.com/in-1851-a-man-picked-two-unpickable-locks-and-changed-1698557792. It was formalized in Kerckhoff's Doctrine of 1883, which stated that a cryptosystem should remain secure even if the enemy knows everything about the system except for the cryptographic key. Xin Jan et al., *ASAP: Eliminating Algorithm-Based Disclosure in Privacy-Preserving Data Publishing*, 36 INFO. SYS. 859, 860 (2011). It was later restated by scientist Claude Shannon that systems should be designed with the assumption that the enemy will immediately acquire full knowledge of them. Anthony Langsworth, *A Ticket to Security Via Obscurity*, RANDOM ACTS OF ARCHITECTURE (Nov. 14, 2012), https://randomactsofarchitecture.com/2012/11/14/a-ticket-to-security-via-obscurity/.

75. Terms that refer to people and groups should be used with sensitivity. In this paper we use the phrase "computer criminal" and we avoid the term "hacker". The original meaning of "hacker" was an unconventional and astonishingly effective programmer, and many people in the computer world still refer to the best of their peers as "hackers" and resent the misapplication of the phrase to mean "criminal". People who research computer security without criminal intent are referred to as "security researchers", even if they do not hew to the preferences of a manufacturer regarding disclosure of their product's vulnerabilities and publicly disclose the vulnerabilities for the protection of the consumer. We do not find a need to designate either party as "white hats" or "black hats", since their affiliation is obvious and the wearing of colored hats is significant in many religions.

76. Tom Espiner, *Trend Micro: Open Source Is More Secure*, ZDNET (June 13, 2006, 11:44 PM), www.zdnet.com/news/trend-micro-opensource-is-more-secure/148445; *see also* Chessman, *supra* note 54, at 223 ("Because of its transparency, open-source software empirically and categorically has fewer errors and security concerns than similarly situated

This brings us back to our tale of two cars: owners of open cars can replace or add aftermarket parts, upgrade the navigation system, or replace the entire GPS receiver. They may be able to hold on to a beautiful antique car with a fine proven motor, while keeping its technology up to date. But an open platform may also facilitate the production of poor aftermarket components that lead to accidents and injury, if those components are not carefully regulated, tested, and held to high standards. Thus, the open car may be the best of cars, it may be the worst of cars. Whichever it is, the open car will offer choices to owners, oversight by researchers, and opportunities and competition for companies after the original vehicle purchase.

Owners of a closed car will fully depend on its manufacturer for upgrades, updates and add–ons. If the manufacturer is unwilling or unable to keep systems up to date and a closed car's software becomes unsafe or unusable, the car might remain operable for manual driving only or it could become unsafe even for that. Car owners may have to decommission an otherwise perfectly good car, just as a smartphone owner might be forced to discard an otherwise–wonderful phone when the cellular network changes. Closed cars which are not updated will be ripe for exploitation by computer criminals who reverse–engineer their vulnerabilities and cause the car to be unusable or even to injure someone. The closed car may be the best of cars, it may be the worst of cars. Whichever it is, the closed car will allow the original manufacturer to retain more choices after the original vehicle sale.

III. PUBLIC POLICY CONSIDERATIONS REGARDING THE OPEN CAR

A. THE OPEN CAR AND ITS ENEMIES

Like many other revolutions, the open car will have enemies, including enemies by economic interest, enemies by public policy conviction and enemies by ignorance.

1. Economic Interests

Car manufacturers are interested in preventing sales of aftermarket parts and add–on products for a number of reasons, not the least of which is the

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programs that are privately developed."). *But see* Noah Gamer, *The Problem With Open Source Malware*, TREND MICRO (Feb. 23, 2016), http://blog.trendmicro.com/the-problem-with-open-source-malware/.

opportunity to capture the associated revenue. If car manufacturers can count on sales of aftermarket parts and products, they can make more units and benefit from economies of scale; for example, they can sell the original car at a lower price if they can count on guaranteed or highly likely sales from aftermarket parts and products. Car manufacturers also want to protect the reputation of their products, which can be harmed by low quality replacement parts or add–on products. Moreover, car manufacturers are exposed to product liability and warranty cases that can arise from situations in which it can be unclear—and costly to litigate—whether a defect or accident was caused by the original car or a third–party replacement or add–on product.[77] Manufacturers have been held responsible for defects caused by aftermarket products sold by third parties on the grounds that the original manufacturer should have warned about risks caused by add–ons.[78]

2. Safety Policies

Law and policy makers lean towards addressing perceived risks to health and safety with laws and regulations that prohibit, prevent, or discourage openness and independence. Just as car owners lock their cars for fear of auto theft and break–ins, regulators may order interfaces to be locked up for fear of cyberattacks, unsafe aftermarket parts, and risky tinkering by hobbyists. Also, openness may suffer collateral damage from any overly detailed regulation that may not even be intended to lock up interfaces, but could result in restrictions as a side effect. For example, if law and policy makers hold car manufacturers responsible for cybersecurity risks created by aftermarket products or parts made by unaffiliated third parties, car manufacturers will be motivated to shut down access to parts in order to mitigate risk and liability.

3. Ignorance

Consumers often act with information deficits. When in doubt, consumers may prefer a branded product made or recommended by the original car manufacturer over a product made by third parties regardless of

77. DEREK H. SWANSON & LIN WEI, UNITED STATES AUTOMOTIVE PRODUCTS LIABILITY LAW (2009), https://www.mcguirewoods.com/news-resources/publications/us-automotive-products-liability.pdf.

78. *See*, BGH, 09.12.1986 VI ZR 65/86 (Honda), www.jurion.de/urteile/bgh/1986-12-09/vi-zr-65_86/; Liriano v. Hobart Corp., 92 N.Y.2d 232, 242–43 (N.Y. 1998) (considering the possibility of manufacturer liability due to a failure to warn even when there is substantial post–sale modification).

quality and price considerations. Thus, original equipment manufacturers can benefit from fear, uncertainty and doubt regarding aftermarket products. To the extent that manufacturers control the retail sales narrative, they can nourish information deficits to their advantage. Car manufacturers tend to control their dealer networks quite tightly and have also been known to influence consumer tests.[79]

Legislatures and regulators may also oppose openness due to information deficits. While the Environmental Protection Agency (EPA) affirmatively opposed copyright exceptions for security research and interoperability,[80] the agency was alerted by a security researcher about problematic software in Volkswagen diesel cars that manipulated emission tests.[81] The independent researcher triggered a wave of investigations, media reports and regulatory action, also concerning other automakers and individual auto–suppliers.[82] Had regulators adequately appreciated the benefits of independent research into automakers' software, they should

79. *See ADAC Admits Making Up Car Award Votes*, LOCAL (Jan. 20, 2014, 9:42 AM), http://www.thelocal.de/20140120/adac-boss-cooks-car-award-votes.

80. In a letter dated July 17, 2015, an Assistant General Counsel of the Environmental Protection Agency (EPA) wrote to the Copyright Office with respect to proposed Section 1201 rulemaking and argued against exceptions that the Electronic Frontier Foundation (EFF) had proposed to enable the very kind of security research that ultimately revealed the car manufacturer manipulations that the EPA then pursued with aggressive enforcement and penalties. *See* Letter from Geoff Cooper, Assistant General Counsel, Envtl. Prot. Agency, to Jacqueline C. Charlesworth, Gen. Counsel & Assoc. Register of Copyrights (July 17, 2015), https://copyright.gov/1201/2015/USCO-letters/EPA_Letter_to_USCO_re_1201.pdf.

81. Rupert Neate, *Meet John German: The Man Who Helped Expose Volkswagen's Emissions Scandal*, GUARDIAN (Sept. 26, 2016, 7:00 AM), www.theguardian.com/business/2015/sep/26/volkswagen-scandal-emissions-tests-john-german-research; Russell Hotten, *Volkswagen: The Scandal Explained*, BBC NEWS (Dec. 10, 2015), www.bbc.com/news/business-34324772.

82. *See* Patrick Welter et al., *Die Autoindustrie Unter Generalverdacht* [*Car Industry Under General Suspicion*], FRANKFURTER ALLGEMEINE (Apr. 20, 2016), www.faz.net/aktuell/wirtschaft/manipulationen-nicht-nur-bei-vw-sondern-auch-bei-mitsubishi-die-autoindustrie-unter-generalverdacht-14189868.html; *Peugeot Raided by French Emissions Investigators*, BBC NEWS (Apr. 21, 2016), www.bbc.com/news/business-36106783; Karishma Vaswani, *When Saying Sorry Is the Only Thing to Do*, BBC NEWS (Apr. 20, 2016), www.bbc.com/news/business-36093703 (referring to the Mitsubishi scandal); *Japan Officials Raid Suzuki Headquarters*, BBC NEWS (June 3, 2016), www.bbc.com/news/business-36441906; *Fiat Shares Drop on Report of Sales Ban*, BBC NEWS (May 23, 2016), www.bbc.com/news/business-36357174; AFP, *Bosch 'Helped Conceal' Volkswagen's Emissions Cheating Devices*, DAILY MAIL (Sept. 7, 2016, 8:58 PM), http://www.dailymail.co.uk/wires/afp/article-3777880/Bosch-helped-conceal-Volkswagens-emissions-cheating-devices.html .

have supported increased openness and not lobbied against limited exceptions for copyright restrictions on automotive software.

Finally, companies themselves may miss opportunities of open platforms due to incorrect assessments of their situation and what the market desires. Owners of intellectual property have been trained to hold it close, and may do so even when openness might lead to much greater income. For example, Research in Motion, the maker of Blackberry, was the first company to introduce handheld email receivers and seemed for a while to be the untouchable leader of smartphones for the enterprise. Nokia also held a great portion of the mobile device market. Both companies underestimated the potential of the App Store introduced by Apple, which pushed the boundaries of openness in the mobile market.[83]

B. POLICY CONSIDERATIONS FOR AND AGAINST THE OPEN CAR

Friends and enemies can advance numerous arguments for and against the open car.

1. Economic Freedoms

As a starting point in a free society and economy, manufacturers should generally be able to design their products in their own discretion. So long as cars are safe and environmentally sustainable, governments should not try to micromanage the product development, design and manufacturing process. Manufacturers, dealers, consumers and other market forces can decide how open or closed cars should be. Open cars should ideally compete with closed cars on free markets to determine which model comes out ahead.

But, on a policy level, one has to take into account that all cars have to share the road and various coordination issues must be resolved through at least some standardization. In most economies, the markets of automotive products are indeed subject to heavy government intervention. Most governments view cars as a major factor for the economy, labor markets, mobility, scientific progress, safety and the environment. Governments feel a high degree of responsibility for the car sector and feel cars must operate in the public interest. In a hypothetically level and competitive market, we could let the market decide upon the degree of openness necessary, and

83. Daniel Eran Dilger, *How Apple's iPhone Destroyed Nokia's World Leading Symbian Platform*, APPLEINSIDER (Oct. 10, 2013, 12:54 AM), http://appleinsider.com/articles/13/10/10/how-apples-iphone-rapidly-destroyed-nokias-world-leading-symbian-platform.

allow automobile manufacturers to engineer their vehicles without government interference. But, in practice, the automotive markets are far less free than other sectors. The sheer cost of manufacturing modern automobiles that perform adequately and comply with all relevant safety and environmental rules means that only a few companies, funded with many billions of dollars, can afford to participate in automobile manufacture. Companies that size can distort the market and have tremendous political influence, often greater influence with regard to their own regulation and guidance than the customers they serve—even when those customers constitute essentially the entire electorate in democratic societies.

In the United States for example, automobile manufacturers, suppliers, and dealers provide over seven million jobs,[84] and the automotive sector employed 5.6% of all EU workers in 2013.[85] In light of the significance for job markets and overall economies, governments have been known to subsidize and bail out car companies in times of trouble or to stimulate growth. Notably, the United States government provided approximately $80 billion to the automobile industry during the 2008 economic downturn.[86] Germany invested $1.1 billion towards subsidizing electric–powered cars,[87] and many other countries have implemented various schemes to promote electric vehicle sales, including access to express lanes, exemptions from road tolls, and reduction or elimination of taxes on fuel and vehicle registration fees.[88] As such, the automotive industry shares a uniquely deep

84. CTR. FOR AUTO. RESEARCH, CONTRIBUTION OF THE AUTOMOTIVE INDUSTRY TO THE ECONOMIES OF ALL FIFTY STATES AND THE UNITED STATES 1 (2015), http://www.cargroup.org/wp-content/uploads/2017/02/Contribution-of-the-Automotive-Industry-to-the-Economies-of-All-Fifty-States-and-the-United-States2015.pdf.

85. *Employment Trends*, EUROPEAN AUTO. MFRS. ASS'N, www.acea.be/statistics/tag/category/employment-trends (last visited Sept. 17, 2017).

86. Brent Snavely, *Final Auto Rescue Tally: Taxpayers Lost $9.3 Billion*, DETROIT FREE PRESS (Dec. 30, 2014, 9:43 AM) www.freep.com/story/money/cars/2014/12/30/treasury-auto-rescue-gm-chrysler-ford/21044191/. Much of the government funding has been since returned. *Id.*

87. Bruce Brown, *Germany Announces $1.1 Billion in Subsidies for Electric Cars*, DIGITAL TRENDS (Apr. 27, 2016, 7:00 AM), www.digitaltrends.com/cars/germany-electric-car-subsidy/.

88. *Overview of Purchase and Tax Incentives for Electric Vehicles in the EU in 2016*, EUROPEAN AUTO. MFRS. ASS'N (Aug. 4, 2016), http://www.acea.be/uploads/publications/Electric_vehicles_overview_2016.pdf. China has also subsidized its electric vehicle market. Christian Shepard, *China Shifts Gears to Drive Electric Car Development*, FIN.

economic relationship with various national governments. Consequently, they have to endure a lesser degree of economic freedom than manufacturers in the information technology sector and other industries.

Most governments also intervene based on antitrust laws and competition policy to counteract market inefficiencies created by tying, monopolization, exclusionary measures, refusal to deal, and other anticompetitive strategies to close markets to effective competition.[89] It is within the purview of governments to act in the interest of the automobile customer by influencing the manufacturers to embrace more openness and maintain an independent aftermarket, indeed one that can produce autonomous driving systems for all vehicles. Just as past governments legislated for a standardized opening for car radios and a standard connector and protocol for smog testing, present governments have the power to guide automobile manufacturers to provide more open interfaces and allow for a thriving aftermarket.

2. *Cybersecurity: The Phantom Menace*

Cybersecurity is currently one of the greatest global concerns, and its potential impact on the automotive industry has not been taken lightly. Consumers, regulators, and companies are worried about the risk that criminals could manipulate connected cars by remotely taking control of on–board computers, especially those critical to passenger safety. For example, in 2015, two security researchers demonstrated that they could manipulate the transmission and shut down the engine of a Jeep while it was on the highway. The report on the research "floated around the entire federal government" including Homeland Security.[90]

Public concerns about security are often used as justification for cracking down on freedoms and locking up open doors. A few years ago, a few leading information technology companies, organized as the Trusted Computing Group,[91] tried to lock down personal computers in the interest

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TIMES (Feb. 25, 2016), http://www.ft.com/cms/s/0/a55e7d36-db8a-11e5-a72f-1e7744c66818.html.

89. *See infra* Section IV.B.

90. Pete Biglow, *Feds Fretting Over Remote Hack of Jeep Cherokee*, AUTOBLOG (July 23, 2016, 10:13 PM), http://www.autoblog.com/2015/07/23/feds-fretting-jeep-cherokee-remote-hack-exclusive/.

91. For a full list of members of Trusted Computing Group, see *Member Companies*, TRUSTED COMPUTING GRP., http://www.trustedcomputinggroup.org/about/member-companies/ (last visited Sept. 17, 2017).

of data and cybersecurity in an initiative broadly referred to as "trusted computing."[92] Their pitch to consumers and policymakers was that "trusted computing" involves providing a secure system of both hardware and a software operating system (i.e. a locked–down computer system architecture) where only trusted and authenticated software and content can be executed. In this context, the computing system is "trusted" because cryptographic keys are necessary to authenticate that programs running on the computer system with which they are communicating have not been modified by third parties, and that the computer system is effectively what it claims to be and is running the software it claims to be running.[93] For this system to work, the keys generally cannot be controlled by third–party servers, third–party content providers or the end–user.

Proponents of "trusted computing" claim that it will reduce vulnerability to viruses, phishing, malware, and cyberattacks, as well as making computers safer, more secure, and reliable for end–users.[94] Critics,

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92. In 2002, Microsoft launched its Trustworthy Computing initiative (originally known as "Palladium" but now more commonly known as "Next-generation Secure Computing Base" ("NGSCB")). S*ee* CRAIG MUNDIE ET AL., MICROSOFT, TRUSTWORTHY COMPUTING (2002), http://download.microsoft.com/documents/australia/about/trustworthy_comp.doc; *Security Model for the Next-Generation Secure Computing Base*, MICROSOFT CORP. (2003), www.microsoft.com/resources/ngscb/documents/ngscb_security_model.doc; Bill Gates, *Bill Gates: Trustworthy Computing*, WIRED (Jan. 17, 2002, 12:00 PM), http://www.wired.com/2002/01/bill-gates-trustworthy-computing/ (reporting an email from Bill Gates to Microsoft employees about the initiative); *Microsoft Next-Generation Secure Computing Base – Technical FAQ*, MICROSOFT CORP. (July 2003), https://msdn.microsoft.com/en-us/library/cc723472.aspx (offering general technical information about NGSCB). Briefly, NGSCB is a security technology for Microsoft's Windows Platform aimed at using specially designed secure and trusted hardware and software to enhance availability, security, privacy and system integrity for its customers. *Id.* However, detractors argued that NGSCB was in effect "Treacherous Computing," Microsoft's attempt to impose digital rights management on its customers which would seriously hamper a customer's control over his/her computer and the content able to be accessed.

93. For an overview of the technical aspects of "trusted computing," see generally Ross Anderson, *Cryptography and Competition Policy - Issues with 'Trusted Computing'*, *in* ECONOMICS OF INFORMATION SECURITY (L. Jean Camp & Stephen Lewis eds., 2004).

94. *See generally* MUNDIE ET AL., *supra* note 92; *see also* Carolin Latze & Ulrich Ultes-Nitsche, *Stronger Authentication in E-Commerce: How to Protect Even Naïve User Against Phishing, Pharming and MITM Attacks*, PROC. IASTED INT'L CONFERENCE COMMC'NS SYS. NETWORKS & APPLICATIONS (2007), http://www.latze.ch/CSNA07.pdf. Key features of "trusted computing" include: (i) remote attestation of the hardware and software (i.e., to authenticate to a third party that the correct software is running on the correct computer system and that it is not malware, before the data, application and/or system can be processed or run); (ii) secure pathways to the user (to ensure that encrypted

however, decry that "trusted computing" policies and technical features are a double–edged sword that can secure systems not only *for* the end–user, but also *against* the end–user.[95] Moreover, "trusted computing" can be abused to enforce remote censorship, as content created using "trusted computing" systems remain under the control of the system that created it rather than the owner of the computing system on which the content is stored. Accordingly, a "trusted computing"–compliant media player may—against the wishes of the owner—identify and report "restricted content." It can be instructed to remotely delete content that the manufacturer believes to be illegitimate. An ebook reader software company may similarly be ordered by authorities to remotely delete a publication that expresses a contrary viewpoint to that of the government.[96] Further, critics argue that "trusted computing" will increase anticompetitive monopolistic behavior as users, particularly businesses, become locked into incumbent "trusted computing" platforms. This is likely to occur due to the significant costs and practical difficulties of accessing "trusted computing" content and software from non–"trusted computing" platforms.[97]

The debate over the merits and dangers of "trusted computing" polarized the industry and consumers for many years, with the controversies

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data input and output from authorized locations remains private and unaltered); (iii) sealed storage of cryptographic keys (i.e., the cryptographic keys required to unseal encrypted data cannot be removed from the "trusted computing" system); and (iv) partitioned memory (data stored within curtained memory can only be accessed by the authenticated trusted application to which it belongs (e.g., the application from which it was created or saved) and not by any other application or operating system, thereby binding data and applications to a specific system). *See* Donald Palmer, *Understanding Trusted Computing From the Ground Up*, ELEC. DESIGN (Nov. 12, 2012), http://electronicdesign.com/microprocessors/understanding-trusted-computing-ground; *see also* Hans Brandl & Thomas Rosteck, Technology, Implementation and Application of the Trusted Computing Group Standard (TCG) (Sept. 2004) (unpublished manuscript), http://www.infineon.com/dgdl/Trusted+Computing+Overview.pdf?fileId=db3a304412b407950112b416592f203e; MICROSOFT CORP., *supra* note 92.

95. *See* Richard Stallman, *Can You Trust Your Computer?*, GNU.ORG (Nov. 18, 2016, 6:31 AM), https://www.gnu.org/philosophy/can-you-trust.en.html; *see also* lafkon, *Trusted Computing*, VIMEO (June 15, 2009, 11:36 AM), https://vimeo.com/5168045 (depicting Benjamin Stephan's 2007 lighthearted short video questioning the merits of trusted computing that won Adobe's Design Achievement Award for Motion Graphics).

96. *See* Ross Anderson, *'Trusted Computing' Frequently Asked Questions*, U. CAMBRIDGE COMPUTER LABORATORY (Aug. 2003), http://www.cl.cam.ac.uk/~rja14/tcpa-faq.html.

97. Anderson, *supra* note 93.

preventing any true widespread adoption, outside of the military.[98] More recently, interest in "trusted computing" has increased again due to potential uses in cloud[99] and mobile computing.[100] Policymakers and traditional automobile manufacturers seem inclined to view cybersecurity concerns as a reason to steer the car of the future towards a more closed design. Yet, as the experience with personal computers and "trusted computing" controversies has shown, closed systems come with significant costs and are not necessarily more secure. Locking down interfaces to promote security may prove to be a dead–end road for the closed car.[101]

3. *Health and Safety*

Cars can be safer if they automatically signal to each other, particularly self–driving cars or those using driver assistance technologies. This in turn requires standardized communication protocols that are open to all car

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98. For a brief discussion why industry adoption of "trusted computing" has been slow, see *Defining and Selling Trusted Computing*, INFOSECURITY MAG. (Sept. 12, 2013), http://www.infosecurity-magazine.com/news/defining-and-selling-trusted-computing/. The US Army and Department of Defense however have supported the adoption of "trusted computing" by mandating since 2007 that all new computer assets acquired contain Trusted Platform Module technology (i.e., a chip for the processor that conforms to the Trusted Computing Group's standard specifications for "trusted computing") where available, for purposes of enhancing cyber security. *See* Memorandum from Department of Defense, Encryption of Sensitive Unclassified Data at Rest on Mobile Computing Devices and Removable Storage Media (July 3, 2007), https://health.mil/Policies/2007/07/03/Encryption-of-Sensitive-Unclassified-Data-at-Rest-on-Mobile-Computing-Devices; William Jackson, *The Quest for the Holy Grail*, WASH. TECH. (Oct. 12, 2007), https://washingtontechnology.com/articles/2007/10/12/the-quest-for-the-holy-grail.aspx; Donald Palmer, *Changing Military Operations Demand Fail-Safe Solutions in Cyber Security*, MIL. & AEROSPACE ELECTRONICS (Sept. 1, 2012), http://www.militaryaerospace.com/articles/print/volume-23/issue-09/opinion/changing-military-operations-demand-fail-safe-solutions-in-cyber-security.html.

99. *See generally* Eghbal Ghazizadeh et al., *Trusted Computing Strengthens Cloud Authentication*, 2014 SCI. WORLD J. 1 (2014); *see also* Pardeep Kumar et al., *Effective Ways of Secure, Private and Trusted Cloud Computing*, 8 INT'L J. COMPUTER SCI. ISSUES 412 (2011).

100. *See* N. Asokan et al., *Mobile Trusted Computing*, 102 PROC. IEEE 1189 (2014); Kathleen McGill, *Trusted Mobile Devices: Requirements for a Mobile Trusted Platform Module*, 32 JOHNS HOPKINS APL TECHNICAL DIGEST 544 (2013), http://www.jhuapl.edu/techdigest/TD/td3202/32_02-McGill.pdf; Bill Ray, *Trusted Computing: It's Back, and Already in a Pocket Near You*, REGISTER (Feb. 29, 2012, 10:12 PM), http://www.theregister.co.uk/2012/02/29/trusted_computing/.

101. For interesting and entertaining stories on threats that closed cars can pose to their owners, see CORY DOCTOROW, CAR WARS, http://this.deakin.edu.au/lifestyle/car-wars (ebook) (last visited Sept. 17, 2017).

manufacturers. The world of connected cars will require information exchanges and a certain degree of openness in the interest of safety.

But opening up cars to unlimited modification, add–ons, and updates also raises serious safety concerns. For example, if a hobbyist or independent repair shop inadvertently or deliberately disables a vehicle's airbag systems, or any malfunction indicator lights, the driver or a subsequent vehicle owner may be subjected to great risk.[102]

Cars must remain as safe as practical in light of conflicting interests, such as affordability, ease of operation, and some degree of Fahrvergnügen (driving pleasure). Providers of parts, add–ons, and services for the open car must be subjected to health and safety requirements that are as rigorous as those regulations that car manufacturers must meet. But government authorities may find it much more difficult to enforce health and safety requirements against thousands of app providers than against a few large automakers. One challenge in this respect is multiple–use products that are not solely or even expressly marketed as automotive products, such as portable GPS receivers or DVD players. Another challenge associated with an open car environment is that it will involve many more and smaller suppliers of parts and software that may be able to offer their products directly to consumers without any control by original equipment manufacturers (OEMs). The many recalls and historic scandals relating to automotive safety[103] highlight this particularly serious policy concern. Smaller and startup technology companies will likely have less expertise and fewer resources than established automotive manufacturers to perform health and safety testing as well as ensure continuous regulatory compliance.

By opening up car designs, governments could enhance competition and reduce the possibility of failures and cover–ups by established car manufacturers, but they could also enable a wide range of less competent and responsible market participants.

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102. *See* General Motors LLC, *supra* note 17; *see also* Motavalli, *supra* note 17; Charette, *supra* note 17.

103. Max Blau, *No Accident: Inside GM's Deadly Ignition Switch Scandal*, ATLANTA MAG. (Jan. 2016), http://www.atlantamagazine.com/great-reads/no-accident-inside-gms-deadly-ignition-switch-scandal/.

4. *Environmental Sustainability*

Governments must continue their work on sustainability by reducing emissions, hazardous substances, and waste in the automotive industry. The more open cars are, the easier monitoring of systems and emissions becomes, as evidenced by the fact that the recent emissions scandal was uncovered by an independent security researcher.[104] By opening up automotive computer systems to a broader ecosystem of information technology developers, policymakers can also reduce the numbers of vehicles that will be discarded due to outdated information technology systems. Closed cars are likely to become obsolete as quickly as smart phones and may be discarded as quickly if their original manufacturer does not offer adequate updates and upgrades. Increasing the effective lifetime of vehicles benefits consumers as well as the environment. From the perspective of environmental sustainability, the open car comes out clearly ahead.

5. *Consumer Protection and Prices*

Opening up automobile aftermarkets should introduce additional competition and drive down prices for parts, repairs, upgrades, and add–ons. It could also create a spike of interest and demand in open cars, which would benefit new car sales overall as well as provide an avenue for differentiation. But it is not a given that the open car will be cheaper than the closed car. If existing car manufacturers do not do well on aftermarket sales, it is possible that they have to raise prices for original cars, which they may have subsidized in expectation of revenue from locked–in car owners in aftermarkets.

6. *Innovation and Intellectual Property Protection*

The open car has the potential to attract a flurry of innovation and hordes of new innovators from various industries and backgrounds to contribute to its development and continuous improvement. Openness can also scare more traditional investors in innovation, who might fear that they cannot monetize their contributions as well in an open environment.[105] The U.S. Constitution contemplates—and nearly all policymakers around the world agree—that innovators should be incentivized by exclusion rights under

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104. Neate, *supra* note 81.

105. *See* Jay Lyman, *SCO Claims Linux GPL Is Unconstitutional*, TECHNEWSWORLD (Oct. 28, 2003, 3:04 PM), www.technewsworld.com/story/31975.html; Darl McBride, *Open Letter on Copyrights*, SCO.COM (Dec. 4, 2003), www.sco.com/copyright/.

patent, copyright, trademark, and other intellectual property laws. Manufacturers that develop protectable designs, computers, and software for cars should be able to enjoy, deploy, and monetize their intellectual property rights by excluding others from infringing them. Yet, intellectual property laws are not intended to favor closed designs over open ones. The ultimate objective of intellectual property protection is to promote innovation and secure access to the best possible intellectual property for the public. Therefore, legislatures and courts have long established limits to intellectual property rights to prevent patent abuse,[106] misuse of copyrights,[107] and control of downstream distribution after a first sale,[108] and to protect interoperability[109] and keep interfaces open.[110] The long–standing policies behind intellectual property law favor the open car.

7. Personal Property Protection

Like intellectual property laws, personal property laws allow property owners to exclude others. This might seem to favor closedness over openness, but only at first sight; personal property laws favor choice for the owner and not for the maker of chattels (here, the automakers). According to traditional notions of personal property, the car owner should be able to decide how the car is steered and whether it remains locked or open.

8. Data Privacy

Data privacy laws are intended to protect each individual's right to information, self–determination and personal privacy. One must be able to decide whether to share information about oneself or whether to keep secrets. The connected car generates immense amounts of information on its drivers, passengers, other observable traffic participants, and the environment through which it travels. Such data is of great interest to many[111]: Governments can use the data to monitor traffic patterns, violations of traffic rules, automobile safety, environmental sustainability,

106. *See* United Shoe Mach. Corp. v. United States, 258 U.S. 451 (1922); *see also* Int'l Salt Co. V. United States, 332 U.S. 392 (1947).

107. Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970 (4th Cir. 1990); 2 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 8.12 (2013).

108. *See, e.g.*, Bobbs-Merrill Co. v. Straus, 210 U.S. 339 (1908); Kirtsaeng v. John Wiley & Sons, Inc., 568 U.S. 519 (2013); *see also* 17 U.S.C. § 109 (2012).

109. *See* Council Directive 2009/24, Art. 6, 2009 O.J. (L 111) 19 (EC).

110. *See* Oracle Am., Inc. v. Google Inc., 750 F.3d 1339, 2014 (Fed. Cir. 2014).

111. David Welch, *Your Car's Been Studying You Closely and Everyone Wants the Data*, BLOOMBERG TECH. (July 12, 2016, 2:00 AM), https://www.bloomberg.com/news/articles/2016-07-12/your-car-s-been-studying-you-closely-and-everyone-wants-the-data.

and the whereabouts of individuals suspected of crimes and misdemeanors. Car manufacturers can use the data to monitor and enhance product safety, develop new features, improve their products, learn more about customer preferences, gain intelligence on competitors' products, and retain evidence for product liability cases. Car dealers can use the data to sell cars more effectively. Car insurance companies can develop risk profiles on particular drivers and adjust premiums and offers of insurance accordingly. Advertisers can market roadside offerings in real time or enrich unrelated consumer profiles. Fleet managers can monitor vehicle location, deployment options, driver performance, and maintenance needs.

Individual car owners, drivers, and passengers on the other hand have privacy expectations. They do not want their whereabouts and driving habits tracked by law enforcement agencies, insurance companies, employers, and others. In 2011, it was discovered that a GPS navigation device manufacturer was providing data, albeit anonymized, to Dutch government officials who used the data in part when determining where to place speed cameras.[112] As a result of the public outcry, the manufacturer agreed to prohibit law enforcement from using their collected data in this manner in the future.[113]

Car owners may or may not want information collected by their car in an accident to be used in investigations or in courts. They might accept data usage for advertising purposes in return for free services or hardware discounts—as they accept on the internet and with respect to mobile services—but they generally want to remain informed and in control.

Governments are increasingly pushing for "privacy by design" requirements on product developers. The U.S. Federal Trade Commission has brought a number of cases against product manufacturers that did not sufficiently consider data security in the design of their products, which have included network cameras,[114] home routers,[115] and software

112. Archibald Preuschat, *TomTom Drives Into Speed Camera Scandal*, WALL ST. J.: TECH. EUR. (Apr. 28, 2011, 6:33 PM), http://blogs.wsj.com/tech-europe/2011/04/28/tomtom-drives-into-speed-camera-scandal/.

113. *Id.*

114. *See*, *e.g.*, Press Release, Fed. Trade Comm'n, Marketer of Internet-Connected Home Security Video Cameras Settles FTC Charges It Failed to Protect Consumers' Privacy (Sept. 4, 2014), https://www.ftc.gov/news-events/press-releases/2013/09/marketer-internet-connected-home-security-video-cameras-settles.

115. Press Release, Fed. Trade Comm'n, ASUS Settles FTC Charges That Insecure Home Routers and "Cloud" Services Put Consumers' Privacy At Risk (Feb. 23, 2016),

platforms.[116] As of May 2018, companies will be expressly required under the EU General Data Protection Regulation to consider data protection by design and by default, implement appropriate technical and organizational measures and enable data portability.[117] Legislatures and regulators across jurisdictions can be expected to push for transparency, notice and choice regarding data also in the automotive space.

The battle for car user data may indirectly affect the open car, as strict privacy laws could inhibit data–driven business models and thus favor certain players over others in the market for open cars and associated technologies and services. But manufacturers of closed and open cars could equally focus on privacy protections for drivers and passengers with technical features, or pursue strategies to collect and commercialize user data.[118] The connected car relies on information exchanges for safety and technical purposes, but the open car does not need to run on open data.

9. *Summary of Policy Considerations For and Against the Open Car*

Environmental sustainability, innovation, and competition considerations favor the open car. Health and safety concerns suggest heightened scrutiny, but the connected car will require information exchanges and open communication protocols. Fears about cybersecurity and data privacy do not support policies against openness, because transparency advantages outweigh benefits from relying on a few trusted manufacturers.

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https://www.ftc.gov/news-events/press-releases/2016/02/asus-settles-ftc-charges-insecure-home-routers-cloud-services-put/.

116. Press Release, Fed. Trade Comm'n, Oracle Agrees to Settle FTC Charges It Deceived Consumers About Java Software Updates (Dec. 21, 2015), https://www.ftc.gov/news-events/press-releases/2015/12/oracle-agrees-settle-ftc-charges-it-deceived-consumers-about-java.

117. *See* Council Directive 2016/670, 2016 O.J. (L 119) (EU).

118. The European Automobile Manufacturers Associations ACEA acknowledges that data is the fuel of the digital economy and focuses on risks resulting from access to data by third parties (i.e., companies other than the automobile manufacturers). PINSENTMASONS, CONNECTED AND AUTONOMOUS VEHICLES: THE EMERGING LEGAL CHALLENGES (2016), https://www.pinsentmasons.com/PDF/2016/connected-and-autonomous-vehicles-2016.pdf. Professor Ricardo Jackson also analyzes the value of data generated by the "connected and automated vehicles" and approaches the perspective of the "data owner, probably the vehicle manufacturer" with the assumption that car manufacturers also own all data generated by cars. *Id.* at 15.

C. POSSIBLE DEGREES OF OPENNESS FROM A TECHNICAL PERSPECTIVE

Based on the policy considerations discussed, the open car will have to be strictly regulated for health and safety reasons, but should provide the capability for aftermarket equipment to connect to its interfaces and replace some equipment. For example, a car owner should be able to add an aftermarket entertainment, navigation, or telematics system that interoperates correctly with all of the automobile's systems. The potential for an aftermarket autonomous driving system to be added is especially interesting. Allowing for the addition of such facilities requires that some components of the automobile be deliberately released without confidentiality restrictions and that they be designed to facilitate interoperability between vendors. They must be robust against error and failures such that mal–performance of the added–on part does not cause the automobile's other systems to crash. We call this level "open interfaces."[119]

Beyond open interfaces, there might be the ability for software creators to create new software to replace or run alongside of the automobile's original software. In the case of entertainment systems this means the ability to run apps from third parties, as many smartphones do. This is referred to as "open platforms."

Software and hardware designs can be publicly disclosed to make it easier for third–party security researchers to find bugs and security issues, thus abandoning trade secret status while remaining copyright protected with all rights reserved except the right to read and discuss what one has read. This avoids problems with nondisclosure agreements, the conventional method used for this sort of examination. Security researchers work most efficiently when they can cooperate with each other and discuss their findings, which in general would be prevented by nondisclosure. The public also has an interest in being informed of security flaws and bugs which affect their safety and privacy. Software source code that is disclosed but still protected by copyright is referred to as "disclosed source code." For hardware designs, the disclosure of schematics, engineering drawings, and other information can be referred to as "disclosed hardware design."

Beyond the aforesaid categories, there is "open source software."[120] Open source software is fully disclosed in the form preferred for software

119. Carol Sledge, *A Discussion on Open-Systems Architecture*, SOFTWARE ENGINEERING INST. BLOG (Nov. 23, 2015), https://insights.sei.cmu.edu/sei_blog/2015/11/a-discussion-on-open-systems-architecture.html.

120. BRUCE PERENS, OPEN SOURCES: VOICES FROM THE OPEN SOURCE REVOLUTION, (1999).

modification, and comes with intellectual property terms that allow its redistribution, modification, and use. Efficient software development and improvement involves copying and adapting existing source code, which requires permissions under copyright law. The fact that copyright law protects software code and enables authors to condition permissions on license terms that require other developers to also grant permissions to their adaptations has ensured the success of the open source software movement.

Attempts to transfer the open source software approach to inventions ("open patents"), hardware ("open hardware"),[121] and data ("open data")[122] have been less successful because the law of patents for inventions requires expensive filings and does not allocate adaptation rights to the first inventor, and because hardware and data are not subject to copyright protection. Innovators who release inventions, hardware, or data on "open terms" may be able to impose contractual requirements of continued openness on the first tier of acquirers, but they would not have efficient remedies against downstream users who are not bound by contractual terms and do not honor openness requirements.

Given the presence and strategic importance of software in today's cars, open source software licensing terms play an increasing role with respect to cars, but many goals and benefits of openness can be reached with open interfaces, open platforms, disclosed hardware designs, and source code disclosures.

The increasing value of technical and personal data generated by and with cars raises another dimension of openness—namely with respect to data. The connected car must exchange information with other devices and systems to deliver maps, location, traffic, news, entertainment, and other data. The autonomous car must exchange information with other cars, cyclists, pedestrians, and other traffic participants for safety purposes. Exchanging information requires giving and taking. It requires open, standardized communication protocols. The open car does not necessitate compromises regarding data privacy, but it will require additional safeguards to protect drivers, passengers, operators, and owners with respect to their personal data and privacy. Companies pursuing data–driven business models may push for open data and may offer consumers

121. John R. Ackerman, *Toward Open Source Hardware*, 34 U. DAYTON L. REV. 183 (2008).

122. *What Is Open Data?*, OPEN KNOWLEDGE INT'L, http://opendatahandbook.org/guide/en/what-is-open-data/ (last visited Sept. 17, 2017).

compelling offerings (e.g., "free" open car for drivers who agree to give their data). But the open car does not need to run on open data.

IV. THE OPEN CAR AND CURRENT LAW

After reviewing arguments for and against the open car from a policy perspective in Part III of this Article, we will now turn to a review of currently applicable law to identify requirements, support, and obstacles for the open car, including laws on motor vehicle safety, emission controls, right to repair, telecommunication regulations, competition, intellectual property, data privacy, and product liability.

A. MOTOR VEHICLE SAFETY LAWS

The National Highway Traffic Safety Administration (NHTSA) has a legislative mandate under the Motor Vehicle Safety Act to issue Federal Motor Vehicle Safety Standards (FMVSS) which are federal regulations with which manufacturers of motor vehicles and equipment must conform and self–certify compliance.[123] The NHTSA can regulate any equipment that poses a safety concern, including emerging technologies introducing potential safety risks.[124] The currently–enacted FMVSS affect a broad range of subsystems within a car, including antilock braking systems (ABS), and electronic stability control (ESC),[125] and adaptive cruise control.[126] It is

123. *See* 49 U.S.C. § 301 (2012); 49 C.F.R. § 501 (2016); *see also* Request for Public Comments: Safety-Related Defects and Emerging Automotive Technologies, 81 Fed. Reg. 18935 (Apr. 1, 2016).

124. Request for Public Comments: Safety-Related Defects and Emerging Automotive Technologies, 81 Fed. Reg. 18935 (Apr. 1, 2016).

125. U.S. DEPT. TRANSPORTATION, FED. MOTOR VEHICLE SAFETY STANDARDS & REGS., Standards 101, 105, 126, http://www.nhtsa.gov/cars/rules/import/FMVSS/ (last visited Sept. 17, 2017); *see also* Patrick Hubbard, *Sophisticated Robots: Balancing Liability, Regulation and Innovation*, 66 FLA L. REV. 1083, 1840 (2014); Sven A. Beiker, *Legal Aspects of Autonomous Driving,* 52 SANTA CLARA L. REV. 1145, 1146–48 (2012); Julie Goodrich, Comment, *Driving Miss Daisy: An Autonomous Chauffeur System,* 51 HOUS. L. REV. 265, 268–75 (2013).

126. A car with adaptive cruise control can automatically reduce speed, applying brakes if necessary, when the car detects an object (generally another vehicle) that is near its front. *See* Bill Howard, *What is Adaptive Cruise Control, and How Does It Work?*, EXTREMETECH (June 4, 2013, 2:19 PM), http://www.extremetech.com/extreme/157172-what-is-adaptive-cruise-control-and-how-does-it-work. This feature is often paired with a forward collision warning system. *Id*.

important to note the FMVSS merely set minimum safety performance requirements rather than dictating *design* specifications.[127]

The United States does not recognize the UN regulations created by the World Forum for Harmonization of Vehicle Regulation.[128] Domestic and foreign manufacturers are required to register with the NHTSA, so long as they manufacture or import any equipment covered by an FMVSS.[129] When offering a product for sale, a manufacturer is further required to self–certify that the product meets all applicable FMVSS.[130] If a manufacturer determines that it has placed a product on the market that does not comply with FMVSS or shows a safety–related defect, it must notify the NHTSA within five days of making such determination.[131]

Aftermarket equipment manufacturers, sellers, dealers, and importers are also subject to the prohibition against making required safety equipment inoperative and reporting safety–related defects.[132] A part or product is considered an "aftermarket" part if it is marketed and used either to replace an original part or as an accessory that can be added onto a car.[133] It is illegal to market any aftermarket part that does not conform with an applicable

127. 49 C.F.R. § 571 (1999); *see also* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., NEW MANUFACTURERS HANDBOOK (2014), http://www.nhtsa.gov/cars/rules/maninfo/Manufacturer_Information_March2014.pdf.

128. *Recommended Best Practices for Importers of Motor Vehicles and Motor Vehicle Equipment*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (July 19, 2016), https://one.nhtsa.gov/Laws-%26-Regulations/Recommended-Best-Practices-for-Importers-of-Motor-Vehicles-and-Motor-Vehicle-Equipment; *see also* Stephen Edelstein, *Grey Market Cars: Everything You Need to Know to Avoid Your Ride Get Crushed*, DIGITAL TRENDS (Aug. 30, 2013, 3:00 PM), http://www.digitaltrends.com/cars/grey-market-cars-everything-you-need-to-know/. UN–compliant vehicles and equipment are not authorized for import, sale, or use in the United States unless they are tested to be compliant with U.S. car safety laws, or for limited non–driving use (e.g. car show displays).

129. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 128.

130. 49 C.F.R. § 571 (1999); *see also* NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *supra* note 127.

131. 49 C.F.R. § 573.6 (2014).

132. 49 U.S.C. § 30122(b) (2012).

133. U.S. DEPT. OF COMMERCE, ON THE ROAD: U.S. AUTOMOTIVE PARTS INDUSTRY ANNUAL ASSESSMENT 4 (2011), http://www.trade.gov/td/otm/assets/auto/2011Parts.pdf ("Aftermarket parts are divided into two categories: replacement parts and accessories. Replacement parts are automotive parts built or remanufactured to replace OE [original equipment] parts as they become worn or damaged. Accessories are parts made for comfort, convenience, performance, safety, or customization, and are designed for add-on after the original sale of the motor vehicle.").

FMVSS or would take a vehicle out of compliance with a safety standard ("make inoperative").[134]

On April 1, 2016, the NHTSA issued a draft Enforcement Guidance Bulletin noting that its jurisdiction extends to: (1) automated vehicle technologies, whether sold as part of a new vehicle or aftermarket replacement/improvement, (2) software including the programs, instructions, code, and data used to operate computers and related devices, such as mobile apps and aftermarket software updates; and (3) software that can affect the car through a remote connection (e.g. the software is run from an external server).[135] Both automakers and equipment manufacturers using new and emerging vehicle technologies and equipment are obligated to notify NHTSA of any safety–related defects.[136]

The NHTSA stated in its proposed guidance that in assessing whether a motor vehicle or piece of equipment poses an unreasonable risk to safety, the NHTSA considers the likelihood of a harm occurring, the potential frequency of a harm, the severity, the known engineering or root cause, and other relevant factors.[137] Further, under the NHTSA's interpretation of its statutory mandate, the agency could compel a recall if a "cybersecurity vulnerability in any of a motor vehicle's entry points (*e.g.*, Wi-Fi, infotainment systems, the OBD-II port) allows remote access to a motor

134. *See* 49 U.S.C. § 301.02 (2012); 49 C.F.R. § 571 (1999); *see also* Make Inoperative Exemptions, 79 Fed. Reg. 38792 (July 9, 2014). Repair businesses and dealers would be exempted from the prohibition to facilitate their modification of motor vehicles so that persons with disabilities can drive or ride in them.

135. *See* 81 Fed. Reg. 18935, 18936. NHTSA's jurisdiction is based on the fact that under the Safety Act, NHTSA's authority covers safety defects apply to any type of product, not just those covered by current FMVSS. Any safety–related defects due to automotive technology under the propose Guidance of the NHTSA, including cybersecurity risks, would require notification.

136. *See* 49 C.F.R. § 573 (2014).

137. NHTSA will weigh several factors in determining whether a vulnerability poses an unreasonable risk to safety including: (i) The amount of time elapsed since the vulnerability was discovered; (ii) the level of expertise needed to exploit the vulnerability (*e.g.,* whether a layman can exploit the vulnerability or whether it takes experts to do so); (iii) the accessibility of knowledge of the underlying system (*e.g.,* whether how the system works is public knowledge or whether it is sensitive and restricted); (iv) the necessary window of opportunity to exploit the vulnerability (*e.g.,* an unlimited window or a very narrow window); and, (v) the level of equipment needed to exploit the vulnerability (*e.g.,* standard or highly specialized). *See* Christopher Achatz & Ashlee Difuntorum, *Cybersecurity Issues of Self-Driving Vehicles*, BRYAN CAVE (July 17, 2017), https://www.bryancave.com/en/thought-leadership/cybersecurity-issues-of-self-driving-vehicles.html.

vehicle's critical safety systems (*i.e.*, systems encompassing critical control functions such as braking, steering, or acceleration)."[138]

The NHTSA also considers how certain features and technologies affect driver behavior. In 2013, the agency published nonbinding guidelines which recommended automakers disable certain functions of a car's built–in infotainment systems whenever the vehicle was in motion, including avoiding 3D or photorealistic images for navigation.[139]

States are free to enact further equipment regulations which adopt NHTSA's standards and their own regulations in the absence of a federal standard.[140] For example, the NHTSA noted in a 2016 policy statement concerning automated vehicles that any potential framework and future regulations would not bar states from setting additional standards.[141] States are in fact leading the charge in drafting and enacting legislation to deal with emerging technologies used in vehicles, with many states having enacted legislation regulating the use of autonomous vehicles.[142]

States have also started to address liability concerns and the degree of openness for automotive designs in legislation.[143] For example, under one proposed Michigan law, a manufacturer is "immune from civil liability for damages that arise out of any modification made to a motor vehicle, an automated motor vehicle, an automated driving system, or automated technology by another person without the manufacturer of automated technology's consent."[144] This could effectively reduce automakers' liability concerns associated with further opening up their systems to third–

138. 81 Fed. Reg. 18935, 18938 (Apr. 1, 2016).

139. NHTSA Driver Distraction Guidelines, 78 Fed. Reg. 24817, 24885-86 (Apr. 26, 2013).

140. *Id.*; *see*, *e.g.*, *Our Progress*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/ (last visited Sept. 17, 2017) (discussing California's adopted regulations).

141. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN, NHTSA PRELIMINARY STATEMENT OF POLICY CONCERNING AUTOMATED VEHICLES http://www.nhtsa.gov/staticfiles/rulemaking/pdf/Automated_Vehicles_Policy.pdf (last visited Sept. 17, 2017). The NHTSA expects to release guidelines for autonomous driving on July 2016. Bruce Brown, *NHTSA Autonomous Car Guidelines Coming By July*, DIGITAL TRENDS (June 15, 2016, 5:50 PM), http://www.digitaltrends.com/cars/nhtsa-autonomous-vehicle-guidelines/.

142. *Autonomous Vehicles: Self-Driving Vehicles Enacted Legislation*, NAT'L CONFERENCE OF STATE LEGISLATURES (Aug. 29, 2017), http://www.ncsl.org/research/transportation/autonomous-vehicles-self-driving-vehicles-enacted-legislation.aspx.

143. *Id.*

144. S.B. 997, 98th Leg., Reg. Sess. (Mi. 2016), http://www.legislature.mi.gov/(S(e3kyj5rcy0zfcuv0niutsaxw))/mileg.aspx?page=GetObject&objectname=2016-SB-0997.

party developers.[145] But not all such proposals, even within Michigan, would have this effect. Michigan's Senate is also considering a bill that would make it illegal for *any* person to access an electronic system of a motor vehicle to "willfully destroy, damage, impair, alter, or gain unauthorized control" of the vehicle.[146] A third proposal, would amend the criminal code for computer crime involving automobiles, setting the sentence to life in prison.[147] Under the bill's current language even security researchers, who operate with the intention to alert the manufacturer or public of any dangerous security flaws, could receive a life sentence. The bill would also be in contradiction with the Library of Congress's newly issued exemptions for the Digital Millennium Copyright Act (DMCA) which allows circumvention of TPMs for purposes of conducting research of vehicle software flaws.[148]

In summary, current safety standards for automobiles in the United States do not present any insurmountable obstacles to openness, but recent state legislature and federal agency initiatives have the potential to impose obligations and liability on car manufacturers that could cause these to favor more closed designs.

B. EMISSIONS CONTROLS AND OPEN PORTS

The On–Board Diagnostic–II (ODB–II) port, which currently serves as an easy access point for intra–vehicle information streams and sensor data, was actually the unique result of environmental regulations. In the 1980s, the California Air Resource Board (ARB) began a smog check program to combat air pollution.[149] Its goal was to identify vehicles with emissions systems in need of repair. In 1988, the ARB developed the first generation On–Board Diagnostic (OBD) requirements, which required vehicles' internal computer systems to monitor emissions performance and alert

145. For further discussion of the effects of product liability upon openness, see *infra* Section IV.H.

146. S.B. 927, 98th Leg., Reg. Sess. (Mi. 2016), http://www.legislature.mi.gov/(S(dade5dsv23j3nis4gwm2rnmd))/mileg.aspx?page=GetObject&objectname=2016-SB-0927.

147. S.B. 928, 98th Leg., Reg. Sess. (Mi. 2016), http://www.legislature.mi.gov/(S(dade5dsv23j3nis4gwm2rnmd))/mileg.aspx?page=GetObject&objectname=2016-SB-0928.

148. For more information on DMCA exemptions, see Maria Scheid, *New DMCA Exemptions*, OHIO ST. U. LIBR. (Dec. 30, 2015), https://library.osu.edu/blogs/copyright/2015/12/30/new-dmca-exemptions/.

149. *See History of the Air District*, BAY AREA AIR QUALITY MGMT. DIST. (Aug. 20, 2014), http://www.baaqmd.gov/about-the-air-district/history-of-air-district.

owners to possible issues.[150] As the technology developed, there was a desire to expand the capabilities of the On–Board Diagnostic systems. The ARB developed the OBD–II requirements to monitor nearly every component that could affect the emissions performance of a vehicle,[151] and in 1996, the Society of Automotive Engineers (SAE) assisted in the OBD–II development process by creating a standard connector plug and set of diagnostic test signals.[152]

The ARB enforced the OBD–II monitoring requirements beginning with the 1996 model year, for all vehicles sold in California, and the EPA adopted the OBD–II requirements for vehicles sold throughout the United States beginning in the same year.[153] In effect, the ARB and EPA had put in place a system that could detect pollution–causing malfunctions throughout a vehicle, alert the driver to the issue, and store specific fault codes and other relevant information about the malfunction, which could be retrieved by connecting standardized equipment to the OBD. The OBD–II requirements were already eclipsing their original intent, as they now provided a means for technicians to rapidly diagnose and repair vehicles. Dealers began using these ports to read engine diagnostic codes for everything from an engine vacuum leak to a malfunctioning emissions system.[154]

The U.S. Environmental Protection Agency (EPA) along with state agencies such as the California Air Resources Board (CARB) continue to regulate emission–related parts.[155] Any part affecting motor vehicle emissions is subject to anti–tampering laws, requires testing, and must be certified, whether the installation is done by owners or a repair facility.[156] While it is currently permitted for an engine control unit to be replaced in

150. CAL. AIR RES. BD., *supra* note 4.

151. *Id.*

152. *On-Board Diagnostics (OBD) Program*, CAL. AIR RES. BD. (June 29, 2017), http://www.arb.ca.gov/msprog/obdprog/obdprog.htm.

153. CAL. AIR RES. BD., *supra* note 4.

154. *See Vehicle Emissions On-Board Diagnostics (OBD)*, ENVTL. PROT. AGENCY, www.epa.gov/state-and-local-transportation/vehicle-emissions-board-diagnostics-obd (last visited Sept. 17, 2017). Computer–based early warning system are required by the 1990 CAA and comes standard on all MY1996 and newer light–duty cars and trucks.

155. *See EPA Emission Standards Reference Guide for On-Road and Nonroad Vehicles and Engines*, U.S. ENVTL. PROT. AGENCY, https://www.epa.gov/emission-standards-reference-guide (last visited Sept. 17, 2017).

156. CAL. AIR RES. BD., *supra* note 152.

the aftermarket, the part must comply with standards including the OBD–II protocol, or the owner and mechanic could be subject to penalties.[157]

Today, vehicles have become increasingly computerized, and the OBD–II (or OBD, generally) is one part of a vehicle's communications infrastructure. The desire to expand On–Board Diagnostics' capabilities has continued, and information regarding vehicles' performance, operations and the status of numerous components is now accessible via the standardized connection to the OBD system.

In addition to making diagnosis and repairs more efficient, the availability of functional and operational data from the OBD system has provided for the rise of telematics, which in the case of automobiles generally refers to the use of hardware to collect, transmit and study vehicle data accessed through the OBD interface and other sensors, most likely an accelerometer and GPS. Given the wealth of information now available, being able to collect and analyze that data—both in individual cases and in the aggregate—has provided concrete benefits, especially in terms of increased safety and efficiency in fleet management.

One example of the expected gains in efficiency from telematics is found in the implementation of Executive Order 13693, which lays out federal plans for automotive sustainability. The implementation plan requires that telematics be used in federal vehicle fleets by 2017, with instructions to use telematics to collect the "maximum vehicle diagnostics" possible at the vehicle level. The plan suggests that properly utilized, telematics information can reduce fleet size, fuel use, misuse of vehicles, and both unnecessary maintenance and lack of maintenance.[158]

The OBD interface is not just a one–way conduit from the engine to the outside world. Gaining access to an automobile's engine control unit (ECU)[159] through the OBD interface to optimize performance is not uncommon in the so–called "tuner" culture. Through a process known as reflashing the ECU, tuners are able to enhance engine performance, often

157. *See Keeping Your Mod's Warranty Intact (for Dummies)*, DUMMIES.COM, http://www.dummies.com/how-to/content/keeping-your-mods-warranty-intact.html (last visited Sept. 17, 2017).

158. *Implementing Instructions for Executive Order 13693, Planning for Federal Sustainability in the Next Decade*, OFFICE OF FED. SUSTAINABILITY 37–38 (June 10, 2015), (implementing § 3(g)(iii) of the Executive Order), https://www.wbdg.org/FFC/FED/EO/eo13693_instructions.pdf.

159. The acronym "ECU" is also used generically to refer to any part of the electronic system in a modern automobile.

at the cost of emissions–law compliance. Tuners use hardware interfaces such as the OpenPort 2.0[160] to access the ECU through the OBD–II interface, then use software such as EcuFlash[161] to alter the parameters stored within the ECU. While such modifications generally void the manufacturer's warranty, some manufacturers are more permissive with regard to software upgrades. In fact, Volvo offers an ECU upgrade called Polestar Performance Optimization.[162] The package is software–based, installed by authorized dealers, and does not void the warranty.[163]

The OBD interface provides consumers with access to other functions as well. Widely available adapters allow users to plug in to the OBD port and send data from the car to a smart phone application wirelessly using standards.[164] Though most available applications focus on diagnostic features such as decoding "check engine" light warnings, tracking fuel efficiency and locating a parked car,[165] other applications allow for more in–depth interaction with the car's functionality. For example, one developer offers an app that allows users to remotely control many actions—including turning on the headlights, sounding the horn and unlocking the doors—on most late–model Nissan products.[166] Another developer offers an application that allows users to customize settings for a variety of makes and models by manipulating the car's auto–lock and one–

160. Tactrix provides a hardware implementation of this standard. *See Tactrix Openport 2.0*, TACTRIX (Sept. 17, 2017), http://www.tactrix.com/index.php?option=com_virtuemart&page=shop.product_details&product_id=17&vmcchk=1&Itemid=53.

161. *See EcuFlash – Freedom to Tune,* TACTRIX, http://www.tactrix.com/index.php?option=com_content&view=article&id=55:image3&catid=35:iceslider (last visited Sept. 17, 2017).

162. *Model Selector*, POLESTAR, https://www.polestar.com/intl/upgrades/model-selector/ (last visited Sept. 17, 2017).

163. *See Engineered Optimisation*, POLESTAR, www.polestar.com/intl/upgrades/optimisation/ (last visited Sept. 17, 2017).

164. See *Android Bluetooth Wireless OBDII Reader & Scan Tool - For Android Devices Only*, BAFX PRODS., www.bafxpro.com/obdreader/ (last visited Sept. 17, 2017); Dan Seifert, *Samsung's New Dongle Gives Your Car an LTE Connection*, VERGE (Feb. 21, 2016, 6:41 AM), www.theverge.com/2016/2/21/11081476/samsung-connected-car-lte-dongle-mwc-2016.

165. *Automatic Pro*, AUTOMATIC, https://www.automatic.com/home/ (last visited Sept. 17, 2017) (listing the homepage for the Automatic).

166. *Remote for Nissan (OBD2)*, APPLE (Mar. 14, 2016), https://itunes.apple.com/us/app/remote-for-nissan-obd2/id821598835?mt=8 (listing the homepage for the remote for the Nissan (OBD2)).

touch window functions, turning daytime running lights on or off, and controlling a variety of other user settings.[167]

What makes the OBD interface an effective port for controlling so many of a car's functions is the fact that it connects the user to the controller area network (CAN) bus—the network of electronic control units within the modern car.[168] But exposing the CAN bus to external connections can also lead to security issues. Wired magazine featured a demonstration by two security researchers who connected to the Wi–Fi hotspot of a 2014 Jeep Cherokee remotely through the internet, exploiting a vulnerability that allowed access through the car's IP address.[169] They then gained access to the CAN bus, which gave them control of virtually all of the car's functions other than steering—including cutting the transmission and slamming on the brakes.[170] While Chrysler was able to fix this issue relatively quickly and efficiently, the implications of improper access to these ECUs became very clear.

The OBD interface is not the only port through which a user might gain access to the CAN bus. For instance, most modern cars now feature a USB input that lets the driver connect with the infotainment system. However, the infotainment system is sometimes connected to the CAN bus, and not sufficiently firewalled. In response to public pressure generated by the Wired article, Chrysler recently mailed USB sticks containing a security update to patch vulnerabilities in its dashboard computer.[171] This episode illustrates the interconnected nature of the dozens of ECUs in modern cars, and the extensive access available once one is connected to the CAN bus.

The data available through the modern OBD systems can be viewed as part of the larger trend toward the connected car. Current cars are operated largely by software, and owners and drivers now have an expectation that, as with other consumer goods, they can connect to the car through smart phones or other devices. Drivers expect and value features like hands–free

167. *Carista*, CARISTA, http://www.caristaapp.com/ (last visited Sept. 17, 2017) (listing product homepage for Carista).

168. *ISO 11898-1:2015*, INT'L ORG. FOR STANDARDIZATION (Dec. 2015), http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=63648.

169. Andy Greenberg, *Hackers Remotely Kill a Jeep on the Highway—With Me In It*, WIRED (July 21, 2015, 6:00 AM), https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/.

170. *Id.*

171. Andy Greenberg, *Chrysler Catches Flack for Patching Hack Via Mailed USB*, WIRED (Sept. 3, 2015, 4:59 PM), https://www.wired.com/2015/09/chrysler-gets-flak-patching-hack-via-mailed-usb/.

calling through a car system connected to their smart phone, or the ability to route music or other entertainment from a smart phone into the vehicle.

Thus, OBD requirements originating from California environmental legislation establish an important degree of openness, which has proven essential in the context of recent emission scandals but also fostered a basis for an open development environment.

C. "RIGHT TO REPAIR" LEGISLATION AND SELF–REGULATION

To protect consumers, lawmakers have proposed or passed various statutes on the "right to repair" that require automakers to provide the same information to independent repair shops as they do to their authorized dealer network.[172] Massachusetts enacted a Right to Repair bill in 2012.[173] Under such bills, car manufacturers have to open car designs to consumers and independent dealers as much as the manufacturers choose to open their designs to their own dealers, but such laws do not require car manufacturers to open ports to add–on accessories or software updates made by unaffiliated suppliers.

Even though a federal Right to Repair bill is still being considered, early in 2014, the Automotive Aftermarket Industry Association, Coalition for Auto Repair Equality, Alliance of Automobile Manufacturers, and the Association for Global Automakers signed a Memorandum of Understanding that is based on the Massachusetts law and which would commit the vehicle manufacturers to meet the requirements of the Massachusetts law in all fifty states.[174] Under the deal, all auto companies would make their diagnostic codes and repair data available in a common format by the 2018 model year, as the Massachusetts law requires. In return, lobbying groups for repair shops and parts retailers would refrain from pursuing state–by–state legislation.[175]

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172. *See We Are the Repair Industry*, REPAIR.ORG, http://repair.org/association/ (last visited Sept. 17, 2017). The first bill was described as attempting to end automakers "unfair monopoly" since new technologies had given automakers the right to control the vital systems of every vehicle and any advance information repair shops needed was not provided to them.

173. *Id.*

174. Gabe Nelson, *Automakers Agree to Right to Repair Deal*, AUTOMOTIVE NEWS, (Jan. 25, 2014, 12:01 AM) http://www.autonews.com/article/20140125/RETAIL05/301279936/automakers-agree-to-right-to-repair-deal. The agreement included they would make available to independent repair shops the same service and training information and tools related to vehicle repair as those available to franchised dealerships.

175. *Id.*

The Coalition for Auto Repair Equality (CARE), which principally represents large auto–parts retail stores and is the primary proponent of the legislation, was unhappy with the agreement and has continued to support the bill.[176] Despite the significant and continued progress being made under the voluntary program, the Right to Repair measure has been reintroduced in each of the subsequent Congresses.[177]

Right to Repair legislation and ensuing industry self–regulation are both directly focused on protecting a basic level of openness in cars. Such laws and regulations directionally support development towards the open car. But they stop short of absolutely requiring a degree of openness that would suffice to guarantee the future of the open car, because they only require OEMs to treat independent dealers like affiliated ones as well as reserving the right for OEMs to keep cars closed for everyone.

D. TELECOMMUNICATION LAW REQUIREMENTS ON CONNECTED CARS AND TELEMATICS SERVICES

To the extent that the open car will have increased (or comparable) connectivity with respect to today's vehicles, automotive manufacturers will need to remain cognizant of the telecommunications regulatory landscape. Manufacturers and aftermarket suppliers looking to develop custom communications protocols would need to be aware of restricted bands of the wireless spectrum, in both the United States and every other territory they intend to reach.[178] They may also benefit from bands reserved for automotive–specific use.[179] Cars using commercial mobile network

176. *The Coalition for Auto Repair Equality*, CARE, http://www.careauto.org/ (last visited Sept. 17, 2017) (listing the homepage for CARE).

177. Right to Repair Act, H.R. 1449, 112th Cong. (2012).

178. *See Table of Frequency Allocations Chart*, FED. COMMC'NS COMM'N (Nov. 13, 2015), https://www.fcc.gov/engineering-technology/policy-and-rules-division/radio-spectrum-allocation/general/table-frequency#block-menu-block-4; *see also* 47 C.F.R. 2.106 (1984).

179. In 1999, the FCC restricted a 75 MHz band around 5.9 GHz for an "Intelligent Transportation System . . . expected to improve traveler safety, decrease traffic congestion, facilitate the reduction of air pollution, and help to conserve vital fossil fuels." 14 FCC Rcd. 18221 (1999). In 2014, NHTSA approved—and has since contemplated mandating—use of this band for vehicle–to–vehicle communication directed to improving safety (*e.g.*, accident avoidance) through messages transmitted between nearby cars. *See* Press Release, Nat'l Highway Traffic Safety Admin., U.S. Department of Transportation Announces Decision to Move Forward with Vehicle-to-Vehicle Communication Technology for Light Vehicles (Feb. 3, 2013), https://www.nhtsa.gov/press-releases/us-department-transportation-announces-decision-move-forward-vehicle-vehicle; *see also* Press Release,

connections may soon face many of the same regulations as traditional handheld device manufacturers, including those within the Telecommunications Act of 1996, which would limit the manufacturer's ability to use or share "information that relates to the quantity, technical configuration, type, destination, location and amount of use of a telecommunications service."[180]

Future autonomous vehicles may communicate with each other and with local infrastructure via a local radio network. Such a network could perform a similar function to turn signals or road signs, and could warn an autonomous vehicle of various hazards around it. A big problem with relying on such a network to inform autonomous driving systems is the requirement that the information be truthful. If cars and local infrastructure are made to lie about the conditions of the road and other vehicles, they could cause an autonomous vehicle to behave incorrectly (for example, stop when there is no need to) or crash. But autonomous driving systems need not be so naïve. Indeed, they will probably work most reliably when they verify all inputs against their environmental data. The potential for a system to deliberately lie on the radio link might be reason to carefully sequester the radio links and any capability to control it away from potential computer criminals. This might in turn cause authorities to tightly lock down all autonomous driving systems. There is also the potential for the link to be fed false information in the name of profit, for example to cause traffic to prefer one location (where businesses might profit from its presence) over another. However, the problematical nature of such a radio link may mean that it never becomes a practical tool for autonomous vehicles.

Manufacturers looking to increase the connectivity of their vehicles should also pay attention to consumer demands—and legislative responses—for openness and control over purchased communications

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U.S. Dept. of Transp., U.S. Department of Transportation Issues Advance Notice of Proposed Rulemaking to Begin Implementation of Vehicle-to-Vehicle Communications Technology (Aug. 18, 2014), https://www.transportation.gov/briefing-room/us-department-transportation-issues-advance-notice-proposed-rulemaking-begin. But the future of this band is uncertain, with the FCC considering proposals to open up this band for other uses. *See* Michael O'Rielly, *Defining Auto Safety of Life in 5.9 GHz*, FED. COMM. COMMISSION (June 8, 2016, 12:46 PM), https://www.fcc.gov/news-events/blog/2016/06/08/defining-auto-safety-life-59-ghz.

180. 47 U.S.C. § 222(h)(1)(A) (2012); *see also* Dorothy J. Glancy, *Autonomous and Automated and Connected Cars—Oh My! First Generation Autonomous Cars in the Legal Ecosystem*, 16 MINN. J.L. SCI. & TECH. 619, 679 (2015). But the FCC has historically avoided applying these regulations to vehicle communications. *See id.* at 679.

devices. In 2014, President Obama signed a bill that created the Unlocking Consumer Choice and Wireless Competition Act, noting it was "another step toward giving ordinary Americans more flexibility and choice."[181] In effect, it limited telecommunication providers' actions when consumers unlocked their devices to access other telecommunication networks, though consumers could only do so for personal or intra–family use.[182] As communications technology becomes increasingly embedded into vehicles, legislators and consumers may similarly demand openness from car manufacturers.

E. COMPETITION

Antitrust and competition laws are generally intended to promote openness and outlaw or limit restraints of trade. Under antitrust and competition laws, as well as self–regulatory undertakings, car manufacturers cannot monopolize aftermarkets for parts and add–on products. They have to comply with a number of rules that are designed to keep automotive markets open.

1. Tying by Contract, Refusal to Deal or Design

Under U.S. antitrust laws, vertical restraints are subject to a rule of reason analysis and have to be justified by pro–competitive effects on the market.[183] Attempts to close aftermarkets are generally suspect from an antitrust perspective, but the exact line between allowed and forbidden is not always clear and depends on the measures taken by OEMs, particularly if they can refer to intellectual property laws to justify exclusionary measures.

The automotive aftermarket encompasses manufacturing, remanufacturing, distribution, retailing, and installation of vehicle parts and accessories after the sale of the automobile by the original equipment

181. Bill Chappell, *Bill Allowing Americans To Unlock Cellphones Passes House, Heads To Obama*, NAT'L PUB. RADIO (July 25, 2014, 4:49 PM), http://www.npr.org/sections/thetwo-way/2014/07/25/335351105/bill-allowing-americans-to-unlock-cellphones-passes-house-heads-to-obama.

182. Unlocking Consumer Choice and Wireless Competition Act § 2(c), Pub. L. No. 113-144, 128 Stat. 1751 (2014).

183. J. Thomas Rosch, *Developments in the Law of Vertical Restraints: 2012*, PRACTISING L. INST. 12–17, https://www.ftc.gov/sites/default/files/documents/public_statements/developments-law-vertical-restraints-2012/120507verticalrestraints.pdf (last visited Sept. 17, 2017).

manufacturer.[184] Most car makers sell new cars and aftermarket parts to authorized dealers. They also supply hardware and software components to dealers to connect to cars in the services aftermarket.[185]

OEMs can apply a variety of tools and methods to restrict aftermarket sales, including technical designs (seller can design a product that makes it difficult for the aftermarket or consumers to replace or repair), tying contracts (seller conditions the sale of a primary product with purchase of a second product or service, or a prohibition on using any other products), intellectual property licensing (seller can protect their products with design patents, utility patents, software copyrights, trademarks, and other mechanisms and refuse to license others) and price discrimination (seller offers price advantages for bundled products).[186] None of these approaches is absolutely prohibited, but all are subject to potential challenges under competition laws.

The law of tying has changed throughout the years. Courts have adopted the more flexible "rule of reason" to assess the competitive effects of tied sales.[187] Under the *Jefferson Parish* test, a per se violation in tying occurs when a seller conditions the sale of a tying product on purchase of a tied product, both are in fact separate products, the supplier has substantial power in market for the tying product, and a substantial volume of transactions are affected.[188] Whether a particular item qualifies as part of a car or a separate add–on product can be controversial. Some automakers are integrating GPS systems, touch screens, and safety monitoring, while they are conceding their operating systems to third parties such as Apple, Microsoft, and Google.[189] Also, the auto industry seems receptive to open–

184. U.S. DEPT. OF COMMERCE, ON THE ROAD: U.S. AUTOMOTIVE PARTS INDUSTRY ANNUAL ASSESSMENT 5–6 (2011), http://www.trade.gov/td/otm/assets/auto/2011Parts.pdf. The International Trade Administration (ITA), divides aftermarket parts into two categories: (1) replacement parts, which are built or remanufactured to replace OE parts as they become damaged, and (2) accessories, parts made for comfort, safety, or customization which are designed for add-on after the original sale of the vehicle. *Id.* at 4.

185. Norman W. Hawker, *Automotive Aftermarkets: A Case Study in Systems Competition*, 56 ANTITRUST BULL. 57, 59–60 (2011).

186. Bauer, *supra* note 64.

187. Jefferson Parish Hosp. v. Hyde, 466 U.S. 2 (1984); *see also* David S. Evans, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 YALE J. REG. 37, 46 (2005).

188. *See* Hyde, 466 U.S. at 2; *see also* Evans, *supra* note 187, at 46.

189. GM and other manufacturers have been integrating Apple software into their vehicles since 2014. *See GM Statement Regarding Apple CarPlay Integration*, GEN. MOTORS (Mar. 3, 2014), http://media.gm.com/media/us/en/gm/news.detail.html/content/

source platforms to maintain a competitive edge, specifically with respect to infotainment technology.[190] As the car becomes increasingly capable as a platform for accepting third party systems and functionality, automakers' integration practices may undergo greater scrutiny. Indeed, the development of the personal computer sparked similar governmental concerns.

In the 1990s, Microsoft acquired a dominant share of the PC operating system market and try to carry its dominance over to the emerging web browser field by bundling Internet Explorer with the Windows operating system (Windows 95).[191] In 1997, Microsoft was sued for anticompetitive marketing practices based on the argument that Internet Explorer and Windows 95 were two self–standing products, and integrating them into one package gave Microsoft an unfair advantage over Netscape.[192] Microsoft famously took the position that it had the right to bundle "even a ham sandwich" into its operating system at the time, Windows 95.[193] In 1998, the DOJ and twenty state attorneys general filed an antitrust suit against Microsoft, charging the company with abusing its market power to thwart competition. The DOJ accused Microsoft of continuing to misuse its Windows operating system by requiring PC makers to agree, as a condition of acquiring a license, to adopt a uniform "first screen" specified by

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Pages/news/us/en/2014/mar/0303-apple-carplay.html; Eric Slivka, *HondaLink Offers Partial Car-iPhone Integration Ahead of Apple's 'iOS in the Car' Initiative*, MACRUMORS (Jan. 23, 2014, 11:51 AM), http://www.macrumors.com/2014/01/23/hondalink-iphone-integration/; Christian Zibreg, *Mercedes-Benz shows off CarPlay integration*, IDOWNLOADBLOG (Mar. 3, 2014), http://www.idownloadblog.com/2014/03/03/mercedes-benz-apple-carplay/.

190. *See, e.g.*, *Daimler Advances Connected Car Technology Through Open Source and Automotive Grade Linux*, AUTO. GRADE LINUX (Jan. 5, 2017), www.automotivelinux.org/uncategorized/2017/01/05/daimler-advances-connected-car-technology-through-open-source-and-automotive-grade-linux.

191. *See*, *e.g.*, James K. Sebenius, *Negotiating Lessons From the Browser Wars*, MIT SLOAN MGMT. REV. (July 15, 2002), http://sloanreview.mit.edu/article/negotiating-lessons-from-the-browser-wars/.

192. Carey C. Basala, *Antitrust Lawsuits Against Microsoft for Monopolizing Computer Software Markets*, SANS INST. 5 (Dec. 2001), https://www.giac.org/paper/gsec/1579/antitrust-lawsuits-microsoft-monopolizing-computer-software-markets/101236 ("Netscape Communications Corporation charged a licensing fee to original equipment manufacturers for the use of Netscape Navigator.").

193. Rick Tetzeli & David Kirkpatrick, *America Loves Microsoft Competitors Cry Foul*, FORTUNE (Feb. 2, 1998), http://archive.fortune.com/magazines/fortune/fortune_archive/1998/02/02/237213/index.htm.

Microsoft.[194] Microsoft explained that the restriction was intended to "prevent OEMs from compromising the quality and consistency of Windows," and to "ensure that all Windows users experience the product the way Microsoft intended it the first time they turn on their PC systems."[195] In 1999, the trial court found that Microsoft was in violation of the Sherman Antitrust Act.[196] Government attorneys urged the court to split Microsoft into two separate companies as penalty for breaking antitrust laws. Ultimately, the cases settled, Microsoft changed some of its practices, and other browsers—and ultimately operating systems—gained traction.[197]

Similarly to Microsoft in the 1990s, the auto industry and some scholars defend restraints of aftermarket parts in order to ensure equipment "quality" and protect goodwill.[198] For example, if a car dealer uses low quality replacement parts, then consumers might mistakenly believe the parts are made by the auto manufacturer or that the cause of the problem is the original car, not the aftermarket part, and this can harm the reputation of the car manufacturer and its products.[199] Confidence in the quality of non–OEM parts appears to be growing,[200] the application of competition laws remains

194. Press Release, Dept. of Justice, Justice Department Files Antitrust Suit Against Microsoft for Unlawfully Monopolizing Computer Software Market (May 18, 1998), https://www.justice.gov/archive/atr/public/press_releases/1998/1764.htm. This sequence determines the screens that every user sees upon turning on a Windows PC. Microsoft's exclusionary restrictions forbid, among other things, any changes by an OEM that would remove from the PC Microsoft's Internet Explorer software or that would add to the PC a competing browser in any more prominent or visible way than the way Microsoft requires Internet Explorer to be presented.

195. Michael A. Carrier, *Unravelling the Patent-Antitrust Paradox*, 150 U. PA. L. REV. 761, 785 (2002)

196. United States v. Microsoft, 87 F. Supp. 2d 30 (D.D.C. 2000) (involving a set of consolidated civil actions filed against Microsoft in 1988). Violations were due to (1) Microsoft's share of the market for Intel-compatible PC operating systems, which was extremely large and stable; (2) Microsoft's dominant market share, which was protected by a high barrier of entry; and (3) due to that barrier, Microsoft's customers lacked commercially viable alternative to Windows.

197. U.S. v. Microsoft Corporation *Information on the Settlement*, DEP'T OF JUSTICE (Nov. 20, 2015), https://www.justice.gov/atr/usdoj-antitrust-division-us-v-microsoft-corporation-information-settlement.

198. *See*, *e.g.*, Bauer, *supra* note 64, at 40; *Cheap Parts Can Cost You a Bundle*, CONSUMER REPORTS 15 (Feb. 1999), http://www.eddiesautobodyct.com/cheap-car-parts-can-cost-you-a-bundle/.

199. Bauer, *supra* note 64, at 40.

200. *See* U.S. DEPT. OF COMMERCE, ON THE ROAD: U.S. AUTOMOTIVE PARTS INDUSTRY ANNUAL ASSESSMENT 12 (2011), http://www.trade.gov/td/otm/assets/auto/2011Parts.pdf ("[M]any consumers no longer judge replacement/aftermarket parts on

controversial.[201] Some scholars favor vertical restraints because the integration of products at a single price can provide efficiencies such as marginal cost savings, quality improvements, and customer convenience.[202]

2. *Exclusionary Practices, Monopolization*

So long as several strong car manufacturers remain present on international markets, competition remains sufficiently strong. Monopolization challenges will therefore focus on aftermarket products for a particular brand, arguing that automotive manufacturers have monopoly power in the aftermarket for their own cars and willfully maintain such power through anticompetitive means.[203] For the purposes of antitrust claims, courts have defined the relevant market as narrow as parts or repair services for a "particular brand of product or service."[204] Once cars are recognized as platforms (should they develop further in that direction), the analogy to an operating system—as in the Microsoft litigation of the 1990s—becomes clear. Automakers must therefore be wary to avoid willful maintenance of market power in the aftermarkets of their products through anticompetitive means. This could take the form of restricting access to key components necessary to compete in the relevant market,[205] or the way in which an alleged monopolist integrates a software offering into its overall systems.[206] An automaker could try to portray the safety or other benefits associated with having a more restricted system as a strong "procompetitive justification," as customers value safety and security in their vehicles, and this could shift the burden of proof on a monopolization claim to a

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anything other than form, fit, and function, since quality parts can and do come from everywhere.").

201. *See Right to Repair: Industry Decisions and Legislative Options: Hearing Before the Subcomm. on Commerce, Trade, and Consumer Protection of the H. Comm. on Energy and Commerce*, 109th Cong. 68 (2005) (statement of Aaron M. Lowe, Vice President of Government Affairs for the Automotive Aftermarket Industry Association) ("Dealership profits are no longer driven by new car sales alone but also parts and service revenue.");

202. *See, e.g.*, Evans, *supra* note 187, at 46; J. Gregory Sidak, *An Antitrust Rule for Software Integration*, 18 YALE J. REG. 1 (2001).

203. Eastman Kodak Co. v. Image Tech. Servs., 504 U.S. 451, 481 (1992) (citing United States v. Grinnell Corp., 384 U.S. 563, 570–571 (1966)). Some courts have included an explicit third factor that the plaintiff suffered an antitrust injury as a result. *See In re* Independent Serv. Orgs. Antitrust Litig., 114 F. Supp. 2d 1070, 1087 (D. Kan. 2000).

204. *Eastman Kodak*, 504 U.S. at 481. Further, the *Kodak* Court found there was a "natural monopoly over the market for parts [Kodak] sells under its name." *Id*. at 459.

205. *See id.* at 481.

206. United States v. Microsoft Corp., 253 F.3d 34, 58 (D.C. Cir. 2001).

plaintiff.[207] But automakers need to remain cognizant of the possibility of monopoly claims, especially if courts begin to view cars as platforms for accepting third–party software or hardware peripherals.[208]

3. Warranty Voidance

Manufacturers can discourage consumers from buying aftermarket products by threatening to void warranties in case a consumer uses parts or maintenance services from third parties or by vaguely stating in maintenance instructions that the product "requires" parts or services offered by the manufacturer or its authorized dealers.[209]

Product manufacturers are not generally required to provide any warranties to end users of their products.[210] If manufacturers choose to extend consumer warranties, they must comply with numerous requirements and prohibitions under the Magnuson–Moss Consumer Warranty Act (Magnuson–Moss Act) and various state laws.[211] Specifically, under the Magnuson–Moss Act, automakers cannot require that only branded parts be used with the product in order to retain the warranty.[212] One exception to the general ban on "tie-in" provisions is that a warrantor may include a tie–in provision if it has received a waiver from the FTC.[213] To get a waiver, there must be proof that one's product will not work properly without a specified item or service.[214] Improper or incorrectly performed maintenance or repair that causes damage to original equipment may also void a warranty.[215] Although the Magnuson–Moss Act

207. *Id.* at 59.

208. *See* Carrier, *supra* note 195 (providing an in–depth conversation about the cases cited in this Section and their effects on antitrust doctrines).

209. Unif. Standards in Auto. Prods. Coal., Comment Letter on Magnuson-Moss Warranty Act Rule Review (Oct. 24, 2011), www.ftc.gov/sites/default/files/documents/public_comments/16-cfr-parts-239-700-701-702-and-703-request-comments-concerning-interpretations-magnuson-moss/00022-80831.pdf.

210. Lothar Determann & Ute Krüdewagen, *Policing Social Media*, RECORDER (Apr. 6, 2012), http://www.therecorder.com/id=1202548286075/Policing-Social-Media

211. *Id.*; *see also* 15 U.S.C. § 2301 (2012).

212. 15 U.S.C. § 2302(c) (2012). These are commonly referred to as "tie in provisions."

213. *Businessperson's Guide to Federal Warranty Law*, FED. TRADE COMM'N (May 2015), https://www.ftc.gov/tips-advice/business-center/guidance/businesspersons-guide-federal-warranty-law.

214. *Id.*

215. *Id.*

covers warranties on repair or replacement parts in consumer products, warranties on services for repairs are not covered.[216]

The Clean Air Act goes even further than the Magnuson–Moss Act in two respects: first, the Clean Air Act requires that manufacturers of new motor vehicles or engines provide buyers with a written emissions warranty[217] whereas more generally, and under the Magnuson–Moss Act, manufacturers are free to refrain from issuing express warranties to consumers. Second, under the Clean Air Act manufacturers are not only prohibited from conditioning warranty claims on usage of branded products, as they are more generally under the Magnuson Moss Act, but the Clean Air Act also requires that manufacturers issue maintenance instructions that "shall not include any condition on the ultimate purchaser's using . . . any component or service . . . which is identified by brand, trade, or corporate name."[218]

F. INTELLECTUAL PROPERTY LAWS

Manufacturers of cars and aftermarket parts and products can protect their patented inventions against unauthorized making, selling, or using; their software against copying, adaptation and distribution; their trade secrets against misappropriation; and their trademarks against unauthorized use in commerce to the extent that it could confuse consumers. With their focus on exclusion powers, intellectual property laws can constitute an obstacle for the open car, but in many cases not an insurmountable one. The ultimate goal of intellectual property rights is to support innovation and progress. Where exclusionary rights are counterproductive to these goals, exceptions tend to be available in the interest of public access to intellectual property. Also, market forces can use the threat of exclusionary rights to require and force openness; for example, the open source software movement has very effectively instrumentalized copyrights to spread openness in software development.

1. Utility Patents

As cars become more and more complex computer products, companies in the automotive sector are facing the same kind of challenges from patents

216. *Id.*

217. *See* 42 U.S.C. § 7541 (2012); *see also* Unif. Standards in Auto. Prods. Coal., *supra* note 209.

218. *See* 42 U.S.C. § 7541; *see also* Unif. Standards in Auto. Prods. Coal., *supra* note 209.

as are faced by producers of complex electronics, computers, software and telecommunications products. A few companies with large patent portfolios in any given field can wield significant powers and threaten openness. Already, companies in the automotive space are filing an ever–increasing number of patents, including many software patents related to navigation and entertainment.[219] Automakers can use patents to prohibit other companies from making aftermarket parts covered by patents. At the same time, owners of computer and software–related patents can threaten automakers and aftermarket part suppliers. Potential innovators and their investors can be deterred by the mere possibility of patent claims, given the cost of litigation. Software patents in particular are difficult to analyze, given their often broad and abstract claims.

In the United States, the threat to smaller companies of overbroad or abstract software patents has been diminished since the U.S. Supreme Court heightened the scrutiny regarding subject matter limitations in *Alice*[220] and U.S. Congress offered in the America Invents Act (AIA) additional options to challenge patents before the patent office.[221]

Also, some automakers have pledged to allow unfettered use of certain patented technologies relating to the automotive field. In June of 2014, Tesla Motors CEO Elon Musk publicly aligned his company with "the spirit of the open source movement" by announcing a new policy on patent enforcement[222] which is essentially an automatic, no–signature–required form of cross–licensing if any of Tesla's competitors actually desire it. He promised that Tesla "will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology."[223] Furthermore, Toyota,

219. THOMSON REUTERS, *supra* note 18. Electronics companies not traditionally associated with the auto industry dominate navigation patents, automotive brands tend to focus more heavily in patents related to infotainment. *Id.*

220. Alice Corp. v. CLS Bank Int'l, 134 S. Ct. 2347 (2014); *see also* 35 U.S.C. § 101 (2012).

221. Post-grant proceedings created by the AIA have resulted in invalidation of at least one claim for 86% of patents that have gone to trial under inter partes review (IPR). U.S. PATENT & TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD STATISTICS (2016), https://www.uspto.gov/sites/default/files/documents/2016-5-31%20PTAB.pdf.

222. Elon Musk, *All Our Patent Are Belong To You*, TESLA BLOG (June 12, 2014), https://www.tesla.com/blog/all-our-patent-are-belong-you; Clark D. Asay, *The Informational Value of Patents*, 31 BERKELEY TECH. L.J. 259, 287–93 (2016).

223. Musk, *supra* note 222.

Hyundai, Kia, and Ford have joined the Open Invention Network (OIN),[224] "a defensive patent pool and community of patent non-aggression" dedicated to the protection of Linux and open source software.[225] Members of OIN share their patents under an agreement that provides royalty–free, worldwide, nonexclusive, nontransferable licenses for OIN patents.[226] The willingness of automakers to surrender intellectual property rights in favor of more open policies could bode well for the future of the open car.

If openness does not prevail and patent wars erupt in the auto industry like in other fields, it is possible that automakers will follow the path of cellphone makers and have to adopt essential patent license requirements on reasonable and nondiscriminatory (RAND) terms. Given the complexity of the nervous system of the modern car, such a move is hardly farfetched. However, many of the current standard setting organizations (SSOs) in the automotive field champion open interoperability standards.[227] In fact, at least one industry SSO has adopted open–source software policies,[228] and seemingly every major auto manufacturer works with Android Auto to support an open development model for infotainment apps.[229] Furthermore, Ford and Toyota are adopting SmartDeviceLink (SDL), an open–source platform for in–vehicle software. If this spirit of openness and interoperability persists, automakers may render RAND cross–licensing agreements for software patents moot.

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224. *The OIN Community*, OPEN INNOVATION NETWORK, http://www.openinventionnetwork.com/community-of-licensees/ (last visited Sept. 17, 2017).

225. *Id.*; *see also* Steven J. Vaughan-Nichols, *Toyota Throws Weight Behind Linux Patent Protection Group*, ZDNET (July 18, 2016, 12:50 AM), http://www.zdnet.com/article/toyota-throws-weight-behind-linux-patent-protection-group/; James M. Rice, *The Defensive Patent Playbook*, 30 BERKELEY TECH. L.J. 725 (2015) (explaining the concept of defensive patent portfolios).

226. *OIN License Agreement*, OPEN INNOVATION NETWORK (May 1, 2012), http://www.openinventionnetwork.com/joining-oin/oin-license-agreement/.

227. *See*, *e.g.*, CAR CONNECTIVITY CONSORTIUM, http://carconnectivity.org/ (last visited Sept. 17, 2017); *see also* CONSUMER ELECS. FOR AUTO., https://ce4a.de/ (last visited Sept. 17, 2017).

228. GENIVI, https://www.genivi.org/ (last visited Sept. 17, 2017).

229. *Introducing the Open Automotive Alliance*, OPEN AUTO ALL., http://www.openautoalliance.net/ (last visited Sept. 17, 2017); *Android Auto*, GOOGLE, https://www.android.com/auto/ (last visited Sept. 17, 2017).

2. *Design Patents*

Besides utility patents, automobile manufacturers have found design–patent protection very attractive.[230] The number of automobile parts protected by design patents has increased dramatically in recent years.[231] From 2009 to 2014, the PTO issued over 1,700 design patents to the top five automakers alone.[232] Design patent owners can enforce their patents in proceedings before the U.S. International Trade Commission (ITC) to block the importation of infringing parts[233] and sell OEM parts at higher prices.[234]

Aftermarket parts makers and insurance companies have pushed legislation to reduce the period car companies can enforce design patents.[235]

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230. In order to obtain a design patent, the U.S. Patent and Trademark Office must determine that a design meets the patent requirements: new, not obvious variant of existing designs, not solely dictated by function and clearly depicted. The PTO does not require design patents to cover the entire product. The United States recognizes thirty–five classes of protectable articles of manufacture including vehicle equipment. A single invention cannot be protected by both a design and utility patent. If it is useful, then the PTO allows for a utility patent. Only an "ornamental" design can be protected by a design patent. A functional design may receive a design patent for its ornamental appearance provided that its appearance is not driven by—that is, the appearance is not the result of—its functionality. *See* William T. Fryer III, Comment Letter to the U.S. Patent and Trademark Office on Pending Legislation H.R. 5638 (110th Congress, 2d Session) and Design Protection (July 14, 2008), http://www.uspto.gov/sites/default/files/web/offices/pac/dapp/opla/comments/designstownhall/fryer.pdf; Norman Hawker, *The Automobile Aftermarket: Crash Parts, Design Patents, and the Escape From Competition*, AM. ANTITRUST INST. (Mar. 22, 2010), http://www.antitrustinstitute.org/sites/default/files/aai%20collision%20repair%20parts%20commentary_032220101350.pdf.

231. *See* Tracy-Gene Durkin, *2015 IPO Report Shows Continued Growth for Design Patents*, IPWATCHDOG (Nov. 20, 2015), http://www.ipwatchdog.com/2015/11/20/63318/id=63318/.

232. In 2014, the five top automakers were GM, Ford, Toyota, Fiat, and Honda. *Top 10 Automakers by US Sales in 2014*, WASH. TIMES (Jan. 5, 2015), http://www.washingtontimes.com/news/2015/jan/5/top-10-automakers-by-us-sales-in-2014/.

233. *See Ford and LKQ Settle Patent Disputes*, AFTERMARKET NEWS (Apr. 2, 2009, 12:00 AM), http://www.aftermarketnews.com/Item/47315/ford-and-lkq-settle-patentdisputes.aspx.

234. Jack Gillis, Dir. of Pub. Affairs, Consumer Fed'n of Am., Remarks Before the U.S. Patent and Trademark Office Town Hall Meeting on the Protection of Industrial Designs (June 16, 2008), http://www.uspto.gov/sites/default/files/web/offices/pac/dapp/opla/comments/designstownhall/consumerfederationamerica.pdf.

235. *See*, *e.g.*, PARTS Act, H.R. 1057, 114th Cong. (2015); PARTS Act, S. 560, 114th Cong. (2015); Access to Repair Act, H.R. 3059, 111th Cong. (2009). Senator Whitehouse

The PARTS Act was introduced in 2015 to Congress.[236] The bill would reduce the period during which car companies can enforce design patents on collision repair parts from fourteen years to thirty months.[237] Some of the benefits proponents point to include: (1) keeping costs down for consumers;[238] (2) preserving competition; and (3) bringing United States in line with European Union and Australian law.[239] Those against the bill have stated that it will lead to a stall in innovation and make Americans lose jobs since most OEMs maintain design centers in the United States to create vehicles that appeal specifically to American consumers.[240] Previous attempts to pass similar legislation have failed and as the law currently stands, aftermarket part makers must continue making sure the parts they make look substantially different from the originals. Scholars have largely

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of Rhode Island introduced essentially the same bill in the Senate. S. 1368, 111th Cong. (2009).

236. PARTS Act, H.R. 1057, 114th Cong. (2015); PARTS Act, S. 560, 114th Cong. (2015).

237. PARTS Act, H.R. 1057, 114th Cong. (2015); PARTS Act, S. 560, 114th Cong. (2015).

238. *See* Frederick R. Warren-Boulton, Comment Letter to the U.S. Patent & Trademark Office Town Hall Meeting on the Protection of Industrial Designs 2 (June 16, 2008), www.uspto.gov/sites/default/files/web/offices/pac/dapp/opla/comments/designstownhall/hong.pdf ("Prices from independents are, on average, 26% lower than those from OEMs [and] OEM prices . . . on those parts are already 8% lower because of competition.").

239. *See Support the PARTS Act & Keep Auto Parts Affordable*, QUALITY PARTS COAL., http://www.keepautopartsaffordable.org (last visited Sept. 17, 2017); *see also* Hawker, *supra* note 185.

240. *See*, *e.g.*, *The "Promoting Automotive Repair, Trade, and Sales Act of 2015" ("PARTS Act"): Hearing on H.R. 1057 Before the Subcomm. on Courts, Intellectual Prop. & the Internet of the H. Comm. on the Judiciary*, 114th Cong. (2015) (statement of Kelly Burris), http://docs.house.gov/meetings/JU/JU03/20160202/104391/HHRG-114-JU03-Wstate-BurrisK-20160202.pdf; Ryan Davis, *Bill Introduced To Shorten Term of Auto Part Design Patents*, LAW360 (Apr. 24, 2013), http://www.law360.com/articles/435591/bill-introduced-to-shorten-term-of-auto-part-design-patents. The Alliance of Automobile Manufacturers wrote a letter to Congress opposing a similar bill, along with other auto industry groups urging lawmakers to oppose the bill stating, "[a]t a time when the U.S. should be seeking enhanced consumer safety through stronger enforcement of our IP laws, Congress should not enact legislation that would eliminate or weaken IP protections." *Id.*; *cf.* Letter from Quality Parts Coal. to Senator Chuck Grassley & Senator Patrick Leahy (Apr. 21, 2015), http://www.pciaa.net/docs/default-source/industry-issues/qpc-senate-letter.pdf?sfvrsn=2.

criticized design patents and some have even called for the total elimination of design patents.[241]

3. Copyright Law

Companies have to design aftermarket parts and products with functionality and interfaces that are compatible with software and electronic control units in cars. In order to achieve compatibility, companies have to analyze and potentially reverse engineer software in cars. This raises issues under copyright law, but is largely permissible at the end of the day.

a) Copyrightability and Exceptions

Computer programs are typically protected by copyright laws at three levels—object code, source code, and graphic user interfaces—but protection does not extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery embodied in the code.[242] Developers are generally permitted to copy interfaces and portions of code that must be adopted to establish interoperability with independently developed programs, either because such code is excluded from copyright protection or falls under fair use considerations.[243]

b) Resale and Essential Step Doctrine

Under Section 117 of the U.S. Copyright Act, lawful owners of software copies sold preinstalled on cars are entitled to copy and adapt such software copies if necessary as an essential step in the utilization of such software or for purposes of repair and maintenance. Companies that distribute software for download or on CDs have largely prevailed on their position that they only license and never sell their software copies with the effects that

241. Hawker, *supra* note 185; Sarah Burstein, *The "Article of Manufacture" in 1887*, 32 BERKELEY TECH. L.J. 1 (2017) (criticizing current design patent jurisprudence); Daniel Brean, *Enough is Enough: Time to Eliminate Design Patents and Rely on More Appropriate Copyright and Trademark Protection for Product Designs*, 16 TEX. INTELL. PROP. L.J. 325 (2008) (calling for the elimination of design patents entirely); Annette Kur, *Limiting IP Protection for Competition Policy Reasons-A Case Study Based on the EU Spare-Parts-Design Discussion*, *in* RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND COMPETITION LAW 313, 327 (Josef Drexl ed., 2008). The authors could not find any law review articles "in defense" of design patents.

242. 17 U.S.C. § 102 (2012).

243. *See* Oracle Am., Inc. v. Google Inc., 750 F.3d 1339 (Fed. Cir. 2014); *see also* Lexmark Int'l, Inc. v. Static Control Components, Inc., 387 F.3d 522 (6th Cir. 2004); Sega Enters. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992); Sony Comput. Entm't, Inc. v. Connectix Corp., 203 F.3d 596 (9th Cir. 2000).

customers and end users never become "owners" entitled under Sections 109 (first sale doctrine) or 117 (limited protection for computer programs) of the U.S. Copyright Act.[244] Car manufacturers have reserved the possibility to take similar positions.[245] This could entitle car manufacturers to demand the deletion of all software copies before a car owner can resell her car and largely render the car unusable. It is not clear that car manufacturers could prevail with this position in U.S. courts, given that they indisputably sell the cars on which software copies are installed in an inseparable way. But clearly, they would likely not prevail with such a position outside the United States, where software companies have found it much more difficult to enforce restrictions even with respect to stand–alone software copies.[246] In a decision regarding the unauthorized importation of books, the U.S. Supreme Court expressed in a dictum concerns and opposition regarding the possibility that car manufacturers should be enabled to control the resale of vehicles by asserting copyrights in software.[247]

c) Open Source Code Licenses

The automotive industry has increasingly been using open source software, particularly for navigation and entertainment systems.[248] If subject to the typical tradeoff associated with using third party code under open source code licenses, automakers may have to tolerate that aftermarket product suppliers copy and use not only interface information, but also any other code that has to be made available under the terms of the license.[249]

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244. *See* Vernor v. Autodesk, Inc., 621 F.3d 1102 (9th Cir. 2010); *see also* Steven A. Heath, *Contracts, Copyright, and Confusion: Revisiting the Enforceability of 'Shrinkwrap' Licenses*, 5 CHI.-KENT J. INTELL. PROP. 12 (2005)

245. *See* General Motors LLC, *supra* note 17, at 12.

246. Case C-128/11, UsedSoft GmbH v. Oracle International Corp., 2012 E.C.R. I-0000 (July 3, 2012).

247. Kirtsaeng v. John Wiley & Sons, Inc., 568 U.S. 519 (2013) (noting that cars might contain copyrighted software owned by entities other than the car manufacturer but stating "principles of fair use and implied license (to the extent that express licenses do not exist) would likely permit the car to be resold without the copyright owners' authorization").

248. Martin von Haller, *Self-Driving Cars and Open Source—What About GPLv3 and Anti-Tivoization?*, DIGITALBUSINESS.LAW (June 27, 2016), http://digitalbusiness.law/2016/06/self-driving-cars-and-open-source-what-about-gplv3-and-anti-tivoization/.

249. Under Section 6 of the GPLv3 License, for example, manufacturers of consumer products have to make available not only source code but also information necessary to modify the software on the device on which it is shipped, such as a car. However, the automakers seem to be aware of this particular clause and as a result have generally avoided

d) Circumvention of Technical Protection Measures

If car manufacturers lock down interfaces and software components with technical protection measures, makers of aftermarket parts and products face an additional hurdle to interoperability: Section 1201 of the U.S. Copyright Act, which was added in 1998 as part of the Digital Millennium Copyright Act, prohibits circumvention of technical protection measures. But the U.S. Copyright Office issued an exemption in 2015 and ruled that it is not a violation of Section 1201 of the Copyright Act if a vehicle owner circumvents technical protection measures to access computer programs that are contained in and control the functioning of cars, when circumvention is a necessary step to allow the diagnosis, repair, or lawful modification of a vehicle function.[250]

In contrast, the Copyright Office limited that exemption to exclude computer programs in ECUs that are chiefly designed to operate vehicle entertainment and telematics systems due to insufficient evidence demonstrating a need to access such ECUs, and out of concern that such circumvention might enable unauthorized access to creative or proprietary content.[251] With this exclusion, the Copyright Office sought to protect copyright owner interests in entertainment content and maps but not preclude, for example, makers of aftermarket entertainment or telematics systems from accessing other ECUs or creating their own ECUs to substitute original entertainment or telematics products, or to establish connectivity between their products and existing cars.

4. Computer Interference Laws

The Computer Fraud and Abuse Act (CFAA) and other computer interference laws[252] prohibit and penalize circumvention of technical

using code under GPLv3. Further, it is not clear whether a car would fit under the definition of a "consumer product" and thus making its software subject to Section 6 of GPLv3. See *GNU General Public License*, FREE SOFTWARE FOUND. (June 29, 2007), https://www.gnu.org/licenses/gpl-3.0.en.html; Jeremiah C. Foster, *Driven to Tears—GPLv3 and the Automotive Industry*, 7 INT'L FREE & OPEN SOURCE SOFTWARE L. REV. 29 (2015); Jonathan Corbet, *LFCS: GPLv3 and Automobiles*, LWN.NET (Apr. 24, 2013), https://lwn.net/Articles/548212/.

250. See Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 80 Fed. Reg. 65944 (Oct. 28, 2015).

251. *Id.* at 65954.

252. For example, California has passed the California Comprehensive Computer Data Access and Fraud Act (forming California Penal Code § 502), which provides it a criminal offense if one "alters, damages, deletes, destroys, or otherwise uses any data, computer,

protection measures. According to the CFAA, one may not access a computer without or exceeding authorization to obtain information.[253] Such laws do not promote openness or closedness. They protect computer owners in their discretion to lock down their computers to safeguard their data and privacy like personal property laws protect a car owner's choice to lock a car. Computer interference laws give the decision on openness or closeness to the owner of the computer. They apply whether a computer has wheels or not.

Under the CFAA, the owner of a car is free to access any ECU in her car, because as the owner of the computer, she is authorized. An aftermarket parts manufacturer can purchase an original car and examine its information technology systems without fear of violating the CFAA. Thus, the impact of computer interference laws on the openness of car designs is fairly limited.

But, with respect to hosted services offered for the connected car, the impact can be much more substantial. If the manufacturer of a car or aftermarket product delivers functionality associated with a car or part online from a hosted server, which remains owned and controlled by the manufacturer, it can prohibit any car owner and competitor from accessing its server in order to reverse–engineer it to establish interoperability with other parts of services. For example, if the maker of a car or navigation system delivers map information online, then third parties could not connect to the hosted service to enrich or supplement the map information.

Operators of online services have already used prohibitions of trespass to chattels and computer abuse to prevent unwanted connectivity to their systems. For example, Craigslist, the popular classified ad posting website, was able to successfully pursue a competitor scraping its housing ads under the Computer Fraud and Abuse Act, where IP address blocking and a cease and desist letter were found to provide sufficient notice of the trespass.[254] Facebook has similarly been successful in using the Computer Fraud and

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computer system, or computer network" with the purpose of, among other things, wrongfully controlling or obtaining data. CAL. PENAL CODE § 502(c)(1) (2016).

253. 18 U.S.C. § 1030 (a)(1) (2012).

254. Craigslist Inc. v. 3Taps Inc., 964 F. Supp. 2d 1178 (N.D. Cal. 2013). The case ended in a settlement favorable to Craigslist, with the trespassing party agreeing to shut down operations. Cyrus Farivar, *3taps to Pay Craigslist $1 Million to End Lengthy Lawsuit, Will Shut Down*, ARS TECHNICA (June 29, 2015, 12:38 PM), http://arstechnica.com/tech-policy/2015/06/3taps-to-pay-craigslist-1-million-to-end-lengthy-lawsuit-will-shut-down/.

Abuse Act as a tool against other companies scraping its data.[255] Even though some online services offerings functionally replace distributed computing products (such as computers with preinstalled software and software copies on CDs), computer interference laws have not yet developed the same exceptions for interoperability of software–as–a–service offerings.[256] Thus, companies that offer online services for cars from servers they own and operate can control very tightly who may connect and who may not. Just as Linux developers had to create their own entire operating system rather than add to Windows, creators of aftermarket products may have to engineer entire new clients, applications, and servers rather than touch an auto manufacturer's server.

5. Trademark Law

Original equipment manufacturers can rely on trademark law to protect their brands and against consumer confusion about the origin of aftermarket parts. But trademark law is not a significant obstacle to openness. Its scope has "remained constant and limited: identification of the manufacturer or sponsor of a good or the provider of a service,"[257] with a fair use defense that "forbids a trademark registrant to appropriate a descriptive term for his exclusive use and so prevent others from accurately describing a characteristic of their goods."[258] Automobile manufacturers cannot use trademark law to prevent aftermarket part suppliers from referring to original part numbers[259] or using comparative advertising to show their

255. Facebook, Inc. v. Power Ventures, Inc., 844 F.3d 1058 (9th Cir. 2016).

256. Lothar Determann & David Nimmer, *Software Copyright's* Oracle *from the Cloud*, 30 BERKELEY TECH. L.J. 161 (2015).

257. New Kids on the Block v. News Am. Publ'g, Inc., 971 F.2d 302, 305 (9th Cir. 1992).

258. *Id.* at 306 (citing Soweco, Inc. v. Shell Oil Co., 617 F.2d 1178, 1185 (5th Cir. 1980)).

259. *See* K-S-H Plastics, Inc. v. Carolite, Inc., 408 F.2d 54 (9th Cir. 1969) (holding that a competitor's use of alphanumeric symbols such as "K-4" did not constitute trademark infringement because the symbols "primary significance . . . is one of pattern and not producer"); *see also* Wilden Pump & Eng'g LLC v. JDA Global LLC, No. CV 12–1051 ODW (DTBx), 2012 U.S. Dist. LEXIS 155599 (C.D. Cal. Oct. 29, 2012) (holding that an OEM did not have trademark protection for their part numbers when "the part numbers [were] not source identifiers, but rather, compatibility indicators"). The party alleging infringement of a part number trademark or other descriptive trademark "has the burden of proof to show secondary meaning, and that burden is substantial." Tenneco Auto. Operating Co. v. Kingdom Auto Parts, 410 Fed. App'x. 841, 846 (6th Cir. 2010) (holding that plaintiff did not meet their burden with respect to part numbers).

aftermarket products or parts are compatible with—or improvements over—the originals.[260] Similarly, automobile manufacturers cannot assert their trademarks to prevent third party repair shops from advertising their proficiencies in supporting particular vehicle models.[261]

6. *Trade Secret Law*

Car manufacturers can protect their technical know–how and confidential business information against misappropriation, but they cannot prevent aftermarket part makers from buying a car to reverse engineer it, identify systems architectures, assess interfaces, and develop interoperable parts or software. Taking a product apart to analyze it is not prohibited under state trade secret law or the new federal Defend Trade Secrets Act of 2016.[262] In Europe, reverse engineering was not generally permitted under trade secret law, yet a new EU Directive on trade secret protection will permit reverse engineering within the entire European Economic Area.[263]

G. DATA PRIVACY AND OWNERSHIP

The connected and autonomous car depends on extensive data sharing and processing, whether it is designed as an open or closed car. Laws regarding data privacy and ownership pose neither insurmountable obstacles, nor a mandate or support for the open car.

1. *Data Privacy Laws*

Data privacy results from "legal restrictions and other conditions, such as social norms, that govern the use, transfer, and processing of personal

260. Third–party trademarks may be used in truthful comparative advertising, as long as the use is not misleading and does not create confusion among customers. *See* Smith v. Chanel, Inc., 402 F.2d 562 (9th Cir. 1968) (holding a perfume manufacturer could reference, in comparative advertising, another brand's product that they claimed to be indistinguishable); *see also New Kids on the Block*, 971 F.2d at 306 (finding a company may use competitor's trademark under fair use if the company "does not attempt to capitalize on consumer confusion or to appropriate the cachet of one product for a different one"); Jacqueline Levasseur Patt, *Not All Is Fair (Use) in Trademarks and Copyrights*, 67 INT'L TRADEMARK ASS'N BULL. (Sept. 15, 2012), http://www.inta.org/INTABulletin/Pages/NotAllIsFair(Use)inTrademarksandCopyrights.aspx.

261. Volkswagenwerk Aktiengesellschaft v. Church, 411 F.2d 350 (9th Cir. 1969).

262. *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 475 (1974) ("[T]rade secret law . . . does not offer protection against discovery by fair and honest means, such as . . . reverse engineering . . . ."); *see also* UNIF. TRADE SECRETS ACT § 1 (UNIF. LAW COMM'N 1985); Defend Trade Secrets Act of 2016, Pub. L. No. 153, 130 Stat. 376.

263. *See* Lothar Determann, Luisa Schmaus & Jonathan Tam, *Trade Secret Protection Measures and New Harmonized Laws*, 17 COMPUTER L. REV. INT'L 179 (2016).

data."[264] Under U.S. privacy laws, drivers, passengers, bystanders and others are protected with respect to reasonable privacy expectations. Employers have to notify their drivers if they track their driving patterns or automotive systems usage,[265] but they are not currently prohibited or restricted in using telematics systems which are in any event more often used to track commercial vehicles than the individuals who operate them. In general, it has long been established within the United States that "[a] person traveling in an automobile on public thoroughfares has no reasonable expectation of privacy in his movements from one place to another."[266] But the law treats privacy of the data that is collected by the cars systems as another matter entirely. More than 90% of new cars also include event data recorders (EDR),[267] which serve as black boxes to record critical sensor and diagnostic data prior to collisions.[268] The federal government enacted the Driver Privacy Act of 2015, which generally limits access to EDR data to vehicle owners and lessees and those with written consent.[269] Further, as of January 2016, seventeen states have enacted their own statutes regulating EDR data disclosure.[270]

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264. Paul Schwartz, *Property, Privacy, and Personal Data*, 117 HARV. L. REV. 2055, 2059 (2004).

265. *See* Lothar Determann & Robert Sprague, *Intrusive Monitoring: Employee Privacy Expectations Are Reasonable in Europe, Destroyed in the United States*, 26 BERKELEY TECH. L.J. 979, 1004–05 (2011) ("Employers can - and often do - destroy any actual expectation of privacy by notifying employees in painstaking detail about the existence and intrusiveness of monitoring and surveillance technologies deployed."). But employers have successfully defended against privacy claims when the tracked vehicles were company–owned, particularly in cases where the tracking was to determine employee misconduct. *See* Karla Grossenbacher, *Employee GPS Tracking - Is It Legal?*, LEXOLOGY: THE GLOBAL PRIVACY WATCH BLOG (Jan. 26, 2016), http://www.lexology.com/library/detail.aspx?g=a94fd053-3106-4836-bc9c-a25d05340ed5.

266. United States v. Knotts, 460 U.S. 276, 281 (1983); *see also* Cardwell v. Lewis, 417 U.S. 583, 590 (1974) ("A car has little capacity for escaping public scrutiny. It travels public thoroughfares where both its occupants and its contents are in plain view.").

267. Martin Kaste, *Yes, Your New Car Has A 'Black Box.' Where's The Off Switch?*, NAT'L PUB. RADIO (Mar. 20, 2013, 4:46 PM), http://www.npr.org/sections/alltechconsidered/2013/03/20/174827589/yes-your-new-car-has-a-black-box-wheres-the-off-switch.

268. *Privacy of Data from Event Data Recorders: State Statutes*, NAT'L CONFERENCE OF STATE LEGISLATURES (Dec. 12, 2016), http://www.ncsl.org/research/telecommunications-and-information-technology/privacy-of-data-from-event-data-recorders.aspx.

269. Fixing America's Surface Transportation Act §§ 24301–35, Pub. L. No. 114-94, 129 Stat. 1312 (2015).

270. NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 268.

But EDRs are not the only tool for data collection within a vehicle; vehicles are also equipped to send data wirelessly to the automakers and third parties (e.g. for diagnostic purposes).[271] Given the privacy implications, automakers in the United States—as well as some abroad—have proactively created a set of consumer principles that guide and limit data transmission, including transparency (e.g., through providing notice of the types of data being collected), choice (e.g., requiring affirmative consent before providing certain types of data to third parties or for marketing purposes), and consumer access.[272]

The U.S. federal government is also considering creating a formal system of protection that is aligned with these goals, through the SPY Car Act. The associated bill was introduced to Congress in 2015 and, if enacted, would require the NHTSA and the FTC to establish consumer data privacy and car computer network security rules to prevent computer criminal access in all motor vehicles manufactured for sale in the United States.[273] Further, in October 2015, House Representatives issued a memorandum suggesting legislation to require auto manufacturers to: develop and implement a privacy policy regarding the collection, sharing and use of driver and vehicle data; file their privacy policies with the Secretary of Transportation; retain data only for legitimate business purposes; and implement reasonable security measures to prevent computer crime.[274] The proposed legislation would also impose penalties of up to $1 million on automakers that fail to file a privacy policy or comply with an express privacy policy and fines of up to $100,000 for failing to prevent computer crime.[275] The proposed legislation would also require the NHTSA to create an Automotive Cybersecurity Advisory Council to develop cybersecurity best practices for vehicle manufacturers.[276]

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271. *See supra* Section IV.B.

272. *See Privacy Principles for Vehicle Technologies and Services*, AUTO ALLIANCE, http://www.autoalliance.org/auto-issues/automotive-privacy/principles (last visited Sept. 17, 2017).

273. SPY Car Act of 2015, S.106, 114th Cong., 1st Sess. (2015). The SPY Car Act was based on a February 2015 report by Senator Markey, who had surveyed automakers about cybersecurity threats to safety and the collection and storage of driving data. The report found identified several purported weaknesses in the security of connected features in cars.

274. Memorandum from Committee Majority Staff, U.S. House of Representatives Comm. on Energy & Commerce (Oct. 19, 2015), http://docs.house.gov/meetings/IF/IF17/20151021/104070/HHRG-114-IF17-20151021-SD002.pdf.

275. *Id.*

276. *Id.*

EU lawmakers have already taken broad action to protect data privacy, enacting legislation that prohibits companies from processing any personal data unless they can claim a statutory exception.[277] The term "personal data" is defined broadly as "any information relating to an identified or identifiable natural person,"[278] which will usually include vehicle location data if someone (e.g., the car owner, lessee, employer, passenger, or others) can identify the driver. The term "processing" is also defined broadly as:

> [A]ny operation or set of operations which is performed on personal data or on sets of personal data, whether or not by automated means, such as collection, recording, organization, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction[.][279]

Such a broad definition will usually include much of what companies or governments interested in personal data want to do with it.

Yet, regarding vehicle data, companies can rely on many exceptions under EU data protection laws: in most scenarios, companies can obtain voluntary consent from drivers,[280] for example, at the time of purchase, when consumer enable new information technology features, or by real time notices communicated via GPS systems in rental cars. Employers cannot rely on employee consent in some jurisdictions if they require all employees to accept tracking, because such consent may not be considered voluntary and could be revoked at any time.[281] But employers and providers of online services can often rely on a need to perform contractual obligations vis–à–vis the data subject, as telematics solutions and online services require data collection in order to function. Also, companies can justify data processing based on legitimate interest considerations in the EU.[282]

One potential concern regarding to the open car could be that it could be harder for drivers and passengers to understand and monitor the data processing practices of multiple suppliers involved in providing the open car as opposed to checking on one OEM providing a proprietary car. But

277. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, art. 6, 2016 O.J. (L 119) 1 [hereinafter GDPR].
278. *Id*. art. 4.
279. *Id*.
280. *Id.* art. 6(1)(a).
281. *Id*. art. 7(3).
282. *Id*. art. 6(1)(f).

consumers are already used to dealing with multiple providers with respect to a much smaller yet more privacy–relevant product—their smartphones—and application platform providers have developed effective permission and disclosure systems under encouragement from the California government that could be ported to the automotive sector.[283] Also, even if car manufacturers pursue proprietary, closed design and business models, they will likely pursue data commercialization plans, whether alone or with partners,[284] and not necessarily prove more trustworthy than information technology companies with established data processing reputations and infrastructures.

2. *Data Ownership*

People sometimes get the idea that they own personal data about themselves,[285] perhaps due to oversimplified privacy advocacy[286] and proposals for property law regimes to protect privacy.[287] The fact is, however, that no one owns facts. Factual information is largely excluded from intellectual property law protection: copyright law protects only creative expression, not factual information.[288]

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283. *See* LOTHAR DETERMANN, CALIFORNIA PRIVACY LAW ch.6-3:2 (forthcoming 2d ed. 2017).

284. *See* EUR. AUTO. MFRS. ASS'N, ACEA STRATEGY PAPER ON CONNECTIVITY (2016), https://www.acea.be/uploads/publications/ACEA_Strategy_Paper_on_Connectivity.pdf.

285. *Cf.* Pamela Samuelson, *Privacy as Intellectual Property?*, 52 STAN. L. REV. 1125, 1130 (2000) (discussing, then refuting, reasons why individuals might naturally assume they own data about themselves).

286. See frequent references to "your own data" in press releases by the European Commission in the context of its new regulatory proposals, *e.g.*, EUROPEAN COMM'N, HOW WILL THE DATA PROTECTION REFORM AFFECT SOCIAL NETWORKS? (2015), http://ec.europa.eu/justice/data-protection/files/3_social_network_en.pdf.

287. *See*, *e.g.*, Paul M. Schwartz, *Property, Privacy, and Personal Data*, 117 HARV. L. REV. 2055 (2004); Lawrence Lessig, *Privacy as Property*, 69 SOC. RES. 247 (2002).

288. *See*, *e.g.*, 17 U.S.C. § 102(b) (2012) ("In no case does copyright protection . . . extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery . . . ."); Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., Inc., 499 U.S. 340, 347–48 (1991) (holding that "all facts – scientific, historical, biographical, and news of the day" are part of the public domain and are not copyrightable because they do not owe their origin to an act of authorship as required by Article I, § 8, clause 8 of the U.S. Constitution for protection) (citations omitted).

Companies that invest significant time and efforts into the creation of databases can claim limited protection under European database laws[289] and U.S. state laws on appropriation.[290] However, the law protects only their investment in the creation of a database, not individual bits of information within it. A manufacturer of a car or computer that stores data does not own the stored data, because the manufacturer did not create the database. A driver who causes their car's onboard computer to collect and store data does not typically own the data either, because the driver does not invest into database creation as required by database protection law. Providers and users of online services for cars, however, could create databases in which they can claim data ownership, such as map data generated via navigation systems, truck fleet management pattern data compiled via telematics services, or driver behavior information collected via driver assistance systems. Even without investing into the creation of a protectable database, companies can claim trade secret protection for information that companies develop or acquire under confidentiality obligations and keep secret with reasonable means.[291]

As discussed above, many of the state statutes regulating disclosure of automotive data are in the context of event data recorders. The majority of these EDR statutes focus on disclosure restrictions rather than ownership.[292] However, five state statutes broach the issue of data ownership.[293] For

289. Commission Directive 96/9/EC of March 11, 1996 on the Legal Protection of Databases, 1996 O.J. (L 77) (offering copyright–like protection to creators of valuable databases).

290. *See*, *e.g.*, Nat'l Basketball Ass'n v. Motorola, Inc., 105 F.3d 841, 852–54 (2d Cir. 1997) (discussing the merits of a "hot news" misappropriation claim in the context of the unauthorized electronic delivery of near–real–time professional basketball statistics); United States Golf Ass'n v. Arroyo Software Corp., 69 Cal. App. 4th 607, 611–12, 618 (1999) (discussing California's common law misappropriation as applicable to the unauthorized use of golf handicap formulas that were developed through intensive data collection and analysis); Bd. of Trade City of Chi. v. Dow Jones & Co., 439 N.E.2d 526, 537 (Ill. App. Ct. 1982) (applying Illinois' common law misappropriation to the unauthorized use of the Dow Jones Index and Averages as a trading vehicle); RESTATEMENT (THIRD) OF UNFAIR COMPETITION § 38 (AM. LAW INST. 1995); Jane C. Ginsburg, *Copyright, Common Law, and Sui Generis Protection of Data-Bases in the United States and Abroad*, 66 U. CIN. L. REV. 151, 157 (1997).

291. *See*, *e.g.*, CAL. CIV. CODE § 3426.11 (2016).

292. NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 268.

293. These states are Arkansas, North Dakota, New Hampshire, Virginia and Oregon. *See* Frederick J. Pomerantz & Aaron J. Aisen, *Auto Insurance Telematics Data Privacy and Ownership*, 1 MEALEY'S DATA PRIVACY L. REP. 1 (2015), www.goldbergsegalla.com /sites/default/files/uploads/FJP-AJA_MealeysDataPrivacy_May2015.pdf.

example, Arkansas's EDR statute provides exclusive ownership of this data to the owner(s) of the motor vehicle and generally prohibits involuntary transfer of this ownership right, particularly to lienholders and insurers.[294] The statute closely associates this data ownership with the right to consent to retrieval and use of the collected data.[295] Oregon's corresponding statute also provides for exclusive ownership and consent rights to this data.[296] But both statutes relate to the ownership of EDR data only, and the ownership of other types of data collected within vehicles is much less clear.[297]

H. PRODUCT LIABILITY

Car manufacturers will be more likely to oppose the open car if they are held indiscriminately liable for all defects and risks associated unsafe consumer or aftermarket modifications. This concern is real: the most recent restatement on product liability states "foreseeable product misuse, alteration, and modification must be considered in deciding whether an alternative design should have been adopted,"[298] which suggests that car manufacturers are not shielded merely because they themselves do not create a defect causing harm. Further, certain U.S. state courts have found manufacturers liable for failing to warn users of danger stemming from post–sale modifications.[299]

Not all "misuse, alteration, and modification" is foreseeable or reasonable such that the car manufacture would be liable. In one commonly–referenced case, the New York high court discussed this threshold and found a manufacturer to not be liable due to "subsequent modification which substantially alter[ed] the product and [was] the proximate cause of plaintiff's injuries."[300] Here, the manufacturer sold a

294. ARK. CODE ANN. § 213-112-107(c) (2010); § 213-112-107(e) (2010).

295. *Id.*

296. ORE. REV. STAT. § 105.928

297. *See* Pomerantz & Aisen, *supra* note 293.

298. RESTATEMENT (THIRD) OF TORTS: PRODUCT LIABILITY § 2 cmt. p (AM. LAW INST. 1998); *see also* Rodriguez v. Besser Co., 115 Ariz. 454, 565 P.2d 1315 (Ariz. Ct. App. 1977) ("When a product is safe for use as intended, a manufacturer has no duty to warn of dangers inherent in its use in an improper or unlikely manner, including unforeseen alterations or modifications of the product.").

299. *See* KENNETH ROSS, AM. BAR ASS'N, POST-SALE DUTY TO WARN 9 (2004).

300. Robinson v. Reed-Prentice Div. of Package Mach. Co., 49 N.Y.2d 471 (N.Y. 1980); *see also Rodriguez*, 115 Ariz. at 460 ("We believe that extending a manufacturer's duty to warn to situations in which it is notified that a third party has modified its product, after the product has left its possession and control and without consultation or participation in the modification by the manufacturer, would place an intolerable burden on the

plastic molding machine that a user subsequently modified so as to compromise a safety mechanism.[301] The court stressed that while a manufacturer may be liable for unintended yet reasonably foreseeable uses, this duty "does not extend to designing a product that is impossible to abuse."[302] Courts have similarly been reluctant to find a car manufacturer at fault when a user repurposed a car component, however modularly designed it was, for a new and unexpected use.[303] In an analogous context of self–driving vehicles, critics are similarly wary of placing too much liability on manufacturers, because of the risk that innovation will be stifled.[304]

A manufacturer can only be found liable under a "failure to warn" theory for product issues stemming from aftermarket products and software whose installations were reasonably foreseeable. Also, plaintiffs can bring claims on a "design defect" theory and argue that their harm was caused the original open design rather than the modifications made by the plaintiffs or third parties.[305] If car manufacturers are held responsible for defects caused

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manufacturer."). *But see* Liriano v. Hobart Corp., 92 N.Y.2d 232 (N.Y. 1998) (holding that "manufacturer liability for failure to warn may exist in cases where the substantial modification defense would preclude liability on a design defect theory," and remanding to lower court for fact-based determination of whether meat grinder manufacturer was liable under this theory for harm caused when after meat grinder safety mechanism was removed).

301. *Robinson*, 49 N.Y.2d at 476–77.

302. *Id.* at 480–81.

303. *See* Trotter v. Hamill Mfg. Co., 143 Mich. App. 593 (Mich. Ct. App. 1985) (holding a car manufacturer not to be liable when a user repurposed a seatbelt assembly from the manufacturer's product to a dune buggy, noting that had they ruled the other way, the "duty would run on ad infinitum, in steering wheels, on rearview mirrors, [and] anything potentially . . . that could be pried or cut or welded off, would be potentially a target for a lawsuit, should someone be injured").

304. Adam Thierer & Ryan Hagemann, *Removing Roadblocks to Intelligent Vehicles and Driverless Cars*, 5 WAKE FOREST J.L. & POL'Y 339, 362–63 (2015).

305. *See* Cox v. Gen. Motors Corp., 514 S.W.2d 197, 200 (Ky. 1974) ("It was necessary for the parties to introduce evidence that the wheel came off the automobile as a proximate result of a design defect and not as a result of the subsequent mishandling and modification."); *see also* C & S Fuel, Inc. v. Clark Equip. Co., 552 F. Supp. 340, 346 (E.D. Ky. 1982) ("[T]he courts should give the defendant the benefit of a doubt where the design it did provide has been tampered with in a significant way. The policy underlying this approach is that a supplier should be strictly liable only for its own design, not for someone else's."); JOHN S. ALLEE, THEODORE V.H. MAYER & ROBB W. PATRYK, PRODUCT LIABILITY § 8.04 (2015). It may be noted that the burdens are shifted in the warranty context, where the car manufacturer must prove any problems stemmed from an installed aftermarket product before denying coverage for repairs. *Auto Warranties & Routine Maintenance*, FED. TRADE COMM'N (May 2015), https://www.consumer.ftc.gov/articles/0138-auto-warranties-routine-maintenance.

by aftermarket products made by unaffiliated third parties, manufacturers may be driven to close interfaces to reduce risks.

To promote openness, courts should allocate product liability on the makers and sellers of aftermarket parts and products, not the original manufacturers. This will not only require adjustments regarding substantive liability principles, but also burden–of–proof considerations, as the sheer cost of having to litigate facts relating to harm causation involving multiple product suppliers associated with open cars may justly horrify car manufacturers. It remains to be seen whether special legislation will be necessary to immunize car manufacturers from liability for aftermarket parts for the open car. Congress granted special liability privileges to online service providers in the 1990s, to promote openness and address fears of contributory liability for third party content that could have throttled freedom of information on the Internet.[306] Congress also enacted special liability privileges for manufacturers of general aviation planes and firearms and similar privileges have been demanded for open robotics.[307] Some states have already enacted statutes specifically to preclude manufacturer liability for harm resulting from certain modifications such as self–driving conversion kits,[308] but the open car is not yet shielded on all roads in the United States.

306. *See* 47 U.S.C. § 230 (2012); 17 U.S.C. § 512 (2012); ZITTRAIN, THE FUTURE OF THE INTERNET, *supra* note 55; Zittrain, *The Generative Internet*, *supra* note 55; LOTHAR DETERMANN, KOMMUNIKATIONSFREIHEIT IM INTERNET [FREEDOM OF COMMUNICATIONS ON THE INTERNET] 589 (1999).

307. *See* Calo, *supra* note 55; *see also* M. Ryan Calo, *Robotics in American Law* (Univ. of Wash. Sch. of Law Research Paper No. 2016-04, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2737598. The General Aviation Revitalization Act is still in force. *See* Sikkelee v. Precision Airmotive Corp., 822 F.3d 680 (3d Cir. 2016). Robotics–specific liability privilege legislation does not seem to have been enacted widely yet, but the sector seems to be doing quite well, judging, for example, by the list of open source robotics projects on Wikipedia. *See Open-Source Robotics*, WIKIPEDIA (last visited Sept. 17, 2017), https://en.wikipedia.org/wiki/Open-source_robotics.

308. *See* FRANÇOISE GILBERT & RAFFAELE ZALLONE, CONNECTED CARS RECENT LEGAL DEVELOPMENTS (2016), http://robots.law.miami.edu/2016/wp-content/uploads/2015/07/GILBERT-ZALLONE-Connected-Cars-REVISED_2016-03-29.pdf; *see also* S.B. 663, 97th Leg., Reg. Sess. (Mi. 2013); Assemb. Amend. to S.B. 313, 77th Sess. (Nev. 2013).

V. CONCLUSIONS AND OUTLOOK: QUO VADIS, OPEN CAR?

The tale of two cars, one open, one closed, is bound to reach its next chapter soon.

To qualify as an open car, an automotive product must be open for technology upgrades, aftermarket products and security researchers. It must have open interfaces and openly disclosed software and hardware. It will thrive if it is associated with open developer platforms. The open car does not need to run on open data. It can protect data privacy and security as well or better as proprietary automotive products do today. It does not need to run on open source software either.[309]

The closed car remains controlled by its original manufacturer, which is in most cases a large company with a strong brand, good safety track record, well-capitalized, subsidized or supported by governments, and generally considered more trustworthy than many smaller companies. The original manufacturer of a closed car retains the power to decide if and when updates and upgrades are offered for the closed car, with what functionality, and at what price. Owners of closed cars will have less options and may have to discard an automobile with a fine motor and design if its original manufacturer does not offer updates that are attractive, reasonably priced or perhaps even necessary from a safety perspective in the rapidly evolving world of connected, autonomous cars.

Either car may be the best of cars or the worst of cars. Compared to the closed, proprietary car, the open car comes out ahead based on technology, competition, sustainability and environmental policy considerations. Its enemies are citing concerns regarding cybersecurity, safety and data privacy; but upon closer review, risks in these areas do not truly justify roadblocks for open cars and rather support increased openness.

Current law is not holding the open car back. Right-to-repair statutes and competition laws are providing tailwind. Intellectual property laws do not present any insurmountable obstacles to openness. Automotive product and safety rules have not (yet) dictated a path in either direction, open or closed. On–board diagnostic ports—originally required in the interest of emission control by the California government—have become a gateway to openness and transparency.

309. But, the open car will likely run better on open source software, judging by the fact that many cars already run open source software today.

Traditional automakers seem open to embrace business models involving open platforms and standards. They have been carefully observing business models that information technology companies have successfully introduced with respect to personal computers, smartphones and other connected devices. Computers on wheels must increasingly interact and compete with other computers. Traditional car manufacturers rightfully perceive information technology companies to become their biggest competitive challenge.

But product liability concerns and the phantom menace of cybersecurity will create hurdles if manufacturers of open cars are held responsible for risks created by third party software or parts. Automakers may be reluctant to open their products further—or even decide to lock products down—if they are indiscriminately held responsible for cyberattacks and other harm created by open cars or if the sheer burden of litigation and proof becomes too threatening.[310] Sector–specific legislation and regulation may be required if courts take a wrong turn in this respect.[311] Car manufacturers are rightfully concerned about excessive liability for third party actions and omissions under current product liability law. If such concerns manifest themselves in mass litigation campaigns or regulatory guidance, automobile manufacturers may turn into lock-down mode. Thus, courts and other lawmakers should carefully reconsider liability principles and precedents in the automotive, PC and Internet sectors to develop an appropriate regime regarding allocation of liability and burden of proof for defective open cars. Such regime should accept that open cars cannot be expected to be completely bug-free, just like computers without wheels are not, and shift risks associated with post sale modifications wholly or partially to the parties making the modification or the general public via insurance. Liability under "failure to warn" should be severely narrowed, as manufacturers choosing to design cars as open platforms cannot track every modification—and certainly not every combination of modifications—that consumers may choose. The law must play its role to help make the open car the best of cars.

310. *See* EUR. AUTO. MFRS. ASS'N, *supra* note 284, at 6 ("Vehicle manufacturers are unable to accept automatic (incalculable) liability for applications developed by third parties.").

311. *See supra* Section IV.E; *cf.* Calo, *supra* note 55, at 601 (noting that the uncertain state of legal liability presents a similar hurdle for making more "open" robots).

THE "SOVEREIGNS OF CYBERSPACE" AND STATE ACTION: THE FIRST AMENDMENT'S APPLICATION—OR LACK THEREOF—TO THIRD–PARTY PLATFORMS

Jonathan Peters†

ABSTRACT

Many scholars have commented that the state action doctrine forecloses use of the First Amendment to constrain the policies and practices of online service providers. But few have comprehensively studied this issue, and the seminal article exploring "[c]yberspace and the [s]tate [a]ction [d]ebate" is fifteen years old, published before the U.S. Supreme Court reformulated the federal approach to state action. It is important to give the state action doctrine regular scholarly attention, not least because it is increasingly clear that "the private sector has a shared responsibility to help safeguard free expression." It is critical to understand whether the First Amendment has a role to play in the private sector, as Internet companies continue to develop and enforce their own content rules—as "lawyers at Facebook and Google and Microsoft" exercise "more power over the future of . . . free expression than any king or president or Supreme Court justice." They are the "sovereigns of cyberspace." This Article analyzes the state action doctrine as it exists today, examining: (1) how it distinguishes the public and private spheres, and (2) whether it forecloses the First Amendment's application to nongovernmental Internet companies, specifically third–party platforms like Facebook and Twitter. The Article concludes that the state action doctrine does foreclose such an application. And with that in mind, the author suggests a state action theory suitable for the digital world.

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I. INTRODUCTION

> We cannot think about [the state action problem] too much; we ought to talk about it until we settle on a view both conceptually and functionally right.[1]
>
> —Professor Charles L. Black, Jr.

The Internet exists in an architecture of privately owned websites, servers, routers, and backbones.[2] Though this architecture enables Internet users to speak online,[3] it has also enabled companies like Google and Facebook to conduct "private worldwide speech 'regulation'"[4] as they create and enforce their own rules regarding what types of user content are

1. Charles L. Black, Jr., *The Supreme Court, 1966 Term—Foreword: "State Action," Equal Protection, and California's Proposition 14*, 81 HARV. L. REV. 69, 70 (1967).

2. David S. Ardia, *Free Speech Savior or Shield for Scoundrels: An Empirical Study of Intermediary Immunity Under Section 230 of the Communications Decency Act*, 43 LOY. L.A. L. REV. 373, 377 (2010).

3. *Id.*

4. Susan Benesch & Rebecca MacKinnon, *The Innocence of YouTube*, FOREIGN POL'Y (Oct. 5, 2012), http://foreignpolicy.com/2012/10/05/the-innocence-of-youtube/.

permissible on their platforms.[5] Essentially, the companies are developing a de facto free speech jurisprudence, and in doing so they appear to be free to devise their content rules unconstrained by constitutional limits, including those imposed by the First Amendment.[6] The basic reason: the companies are nongovernmental entities.

Scholars have noted that online intermediaries appear to operate outside of constitutional strictures. Professor David Ardia says that "[w]hat many consider the largest public space in human history is not public at all."[7] Professor Jeffrey Rosen says it is challenging to protect "values like privacy and free speech in the age of Google and Facebook, which are not formally constrained by the Constitution."[8] Professor Jack Balkin says that as "our economic and social lives are increasingly dominated by information technology and information flows, the First Amendment seems increasingly irrelevant to the key free speech battles of the future."[9] Underlying these comments is the state action doctrine, which dictates that the federal government lacks the "power to regulate the policies and practices of private entities under Section 5 of the Fourteenth Amendment."[10] Recall that the First Amendment begins: "*Congress* shall make no law . . . ."[11] And the Fourteenth Amendment, which has been read to apply the First Amendment to the states, includes the command: "No *state* shall . . . ."[12] A threshold question in all First Amendment cases, therefore, is whether an alleged violation was committed by a government actor.[13]

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5. *See* Somini Sengupta, *On Web, a Fine Line on Free Speech Across the Globe*, N.Y. TIMES (Sept. 16, 2012), http://www.nytimes.com/2012/09/17/technology/on-the-web-a-fine-line-on-free-speech-across-globe.html.

6. *See id.*

7. Ardia, *supra* note 2, at 377.

8. Jeffrey Rosen, *The Deciders: Facebook, Google, and the Future of Privacy and Free Speech*, *in* CONSTITUTION 3.0: FREEDOM AND TECHNOLOGICAL CHANGE 81 (Jeffrey Rosen & Benjamin Wittes eds., 2011).

9. Jack M. Balkin, *The Future of Free Expression in a Digital Age*, 36 PEPP. L. REV. 427, 427 (2009).

10. *Developments in the Law: State Action and the Public/Private Distinction*, 123 HARV. L. REV. 1248, 1250 (2010) [hereinafter *State Action and the Public/Private Distinction*].

11. *See* U.S. CONST. amend. I (emphasis added); *see also* EUGENE VOLOKH, THE FIRST AMENDMENT AND RELATED STATUTES: PROBLEMS, CASES AND POLICY ARGUMENTS 1 (4th ed. 2011).

12. U.S. CONST. amend. XIV (emphasis added); *see also* VOLOKH, *supra* note 11, at 1.

13. VOLOKH, *supra* note 11, at 1.

Courts so far have held that private online service providers are not state actors for First Amendment purposes.[14] However, few scholars have directly addressed the problem of the state action doctrine and its application to such providers, and those scholars mostly have done so in special contexts like virtual worlds or government–operated webpages, or in a discussion of a larger topic like the power that intermediaries exercise over speech.[15] Moreover, the seminal article exploring "[c]yberspace and the [s]tate [a]ction [d]ebate" is fifteen years old, published before the U.S. Supreme Court handed down a decision reformulating the federal approach to state action.[16] Now is the time to give the doctrine more scholarly attention—as Professor Charles Black said, to "talk about it until we settle on a view both conceptually and functionally right"[17]—because Internet policy discussions worldwide are converging on the idea that "the private

14. *See, e.g.*, Name.Space, Inc. v. Network Sols., Inc., 202 F.3d 573 (2d Cir. 2000); Island Online, Inc. v. Network Sols., Inc., 119 F. Supp. 2d 289 (E.D.N.Y. 2000); Nat'l A-I Advert., Inc. v. Network Sols., Inc., 121 F. Supp. 2d 156 (D.N.H. 2000); CompuServe, Inc. v. Cyber Promotions, Inc., 962 F. Supp. 1015 (S.D. Ohio 1997); Am. Online, Inc. v. Cyber Promotions, Inc., 948 F. Supp. 436 (E.D. Pa. 1996).

15. *See, e.g.*, Ardia, *supra* note 2; Rosen, *supra* note 8; Balkin, *supra* note 9; *see also* Eric Goldman, *Speech Showdowns at the Virtual Corral*, 21 SANTA CLARA COMPUTER & HIGH TECH. L.J. 845, 851–53 (2005) (considering the tension between free speech rights and private property rights in the context of virtual worlds, and arguing that virtual worlds, like other online providers, do not merit special rules); James Grimmelmann, *The Internet is a Semicommons*, 78 FORDHAM L. REV. 2799, 2816–18 (2010) (arguing that the Internet is a semicommons and that the interplay between its private and common characteristics explains some of the enduring tensions in Internet law, including those under the state action doctrine); Rebecca Tushnet, *Power Without Responsibility: Intermediaries and the First Amendment*, 76 GEO. WASH. L. REV. 986, 988 (2008) (showing that intermediaries have power over speakers but no responsibility to the speakers in using that power, and that "the First Amendment does not currently require a particular solution"); Christopher S. Yoo, *Free Speech and the Myth of the Internet as an Unintermediated Experience*, 78 GEO. WASH. L. REV. 697, 700 (2010) (discussing the fact that "[d]espite the best efforts of some advocates to expand the scope of the First Amendment, it remains a limit on governmental action that does not reach private action," even those of Internet intermediaries); David S. Ardia, *Government Speech and Online Forums: First Amendment Limitations on Moderating Public Discourse on Government Websites*, 2010 BYU L. REV. 1981, 1985–2010 (2010) (discussing why the First Amendment's public forum doctrine is ill–suited to address the problems created when the government engages in expressive activities online).

16. *See generally* Paul Schiff Berman, *Cyberspace and the State Action Debate: The Cultural Value of Applying Constitutional Norms to "Private" Regulation*, 71 U. COLO. L. REV. 1263, 1263 (2000).

17. Black, *supra* note 1, at 70.

sector has a shared responsibility to help safeguard free expression."[18] In the United States, it is critical to study and understand whether the First Amendment has any role to play in the private sector as "lawyers at Facebook and Google and Microsoft" exercise "more power over the future of . . . free expression than any king or president or Supreme Court justice."[19] They are the "sovereigns of cyberspace."[20] Against that background, this Article offers a singular examination of the First Amendment's application to nongovernmental Internet companies, specifically third–party platforms like Facebook and Twitter. This Article explores the state action doctrine, focusing on: (1) how it distinguishes the public and private spheres, and (2) whether it forecloses the First Amendment's application to nongovernmental third–party platforms.

This Article begins with a general analysis of the doctrine and its traditions and values, as well as its historical distinction between public and private spheres.[21] Then, the Article explores the law of public forums in order to analyze the similarity between third–party platforms and public forums.[22] And, finally, the Article concludes that the state action doctrine, under its latest reformulation by the Supreme Court, *does* foreclose the First Amendment's application to private Internet companies like Facebook and Twitter.[23] With that in mind, the author suggests a state action theory suitable for the digital world that would enable judges to balance the rights of property owners with those of property users and be able to characterize a space as public for state action purposes even if it did not qualify as a traditional public forum.[24]

II. STATE ACTION DOCTRINE: GENERAL ISSUES

The state action doctrine, first articulated in 1883 in the *Civil Rights Cases*, is one of the "most complex and discordant doctrines in American

18. Hillary Rodham Clinton, U.S. Sec'y of State, Remarks on Internet Freedom at the Newseum, Washington, D.C. (Jan. 21, 2010), https://2009-2017.state.gov/secretary/20092013clinton/rm/2010/01/135519.htm.

19. Terry Gross & Jeffrey Rosen, *Interpreting the Constitution in the Digital Era*, NPR (Nov. 30, 2011, 12:13 PM), http://www.npr.org/2011/11/30/142714568/interpreting-the-constitution-in-the-digital-era.

20. REBECCA MACKINNON, CONSENT OF THE NETWORKED: THE WORLDWIDE STRUGGLE FOR INTERNET FREEDOM xiv (2012).

21. *See infra* Part II.

22. *See infra* Part II. Section E.

23. *See infra* Part III.

24. *See infra* Part III. Section C.

jurisprudence."[25] For years, it held that the Fourteenth Amendment and the Bill of Rights restricted only governmental action.[26] However, as the doctrine evolved, it came to apply far more widely—even to actions of private individuals and entities. For example, in the 1946 case *Marsh v. Alabama*, the U.S. Supreme Court ruled that Alabama violated the First and Fourteenth Amendments by forbidding a Jehovah's Witness from distributing religious materials in a privately–owned town.[27]

The challenge of applying the doctrine today lies at the juncture explored in *Marsh*, where the private and public spheres meet. It is a challenge not only because the doctrine is "complex and discordant" but also because of increasing privatization that has significantly "altered the foundation upon which the traditional understanding of the public/private distinction has been built."[28] Such privatization has touched many areas of public life, from prisons[29] to hospitals[30] to schools[31] to development agencies[32] and beyond.

There is a need, then, for a continuing discussion of the proper boundaries of the state action doctrine,[33] which remains as important today as it was in the last century.[34] The doctrine has emerged fitfully, and the public/private distinction has evolved over time.[35] For those reasons, the doctrine and distinction have been targets of scholarly criticism.[36] The

25. *State Action and the Public/Private Distinction*, *supra* note 10, at 1250; *see also* Erwin Chemerinsky, *Rethinking State Action*, 80 NW. U. L. REV. 503, 505 (1985) (describing the views of commentators that the state action doctrine is so incoherent that it "never could be rationally or consistently applied").

26. *See Civil Rights Cases*, 109 U.S. 3, 18 (1883).

27. 326 U.S. 501 (1946).

28. *See, e.g., State Action and the Public/Private Distinction*, *supra* note 10, at 1250–51.

29. *See* Sharon Dolovich, *State Punishment and Private Prisons*, 55 DUKE L.J. 437 (2005).

30. *See* BENJAMIN R. BARBER, JIHAD VS. MCWORLD 239 (1995).

31. *See* Valerie Strauss, *A Primer on the Damaging Movement to Privatize Public Schools*, WASH. POST (Jan. 7, 2016), https://www.washingtonpost.com/news/answer-sheet/wp/2016/01/07/a-primer-on-the-damaging-movement-to-privatize-public-schools/.

32. *See Swaney v. Tilford*, 898 S.W.2d 462, 463 (Ark. 1995).

33. *State Action and the Public/Private Distinction*, *supra* note 10, at 1251.

34. *Id.* at 1250.

35. *See id.* at 1311–12.

36. *See, e.g.*, Richard C. Reuben, *Public Justice: Toward a State Action Theory of Alternative Dispute Resolution*, 85 CALIF. L. REV. 577, 610–11 (1997) (describing various examples of the criticism).

doctrine has been described as "incoherent,"[37] a "conceptual disaster area,"[38] a "failure,"[39] and a ruse to advance subjective policy goals.[40] Some scholars have called for the doctrine's abandonment "in favor of a balancing approach that focuses on constitutional values."[41]

But other scholars have defended the doctrine for its role in "preserving the primacy of the law of a written constitution,"[42] and the Supreme Court continues to use the doctrine to analyze constitutional claims in a range of contexts, such as racial discrimination, creditors' rights, defamation, and antitrust.[43] Historically, the Justices have used one of two tests to apply the doctrine, finding the conduct of a private actor to be state action where: (1) "the private actor performs a public function"; or (2) the private actor "performs a private function that has a close 'nexus' to, or 'entanglement' with, the government."[44] Those tests represent a "threshold requirement" of government or quasi–government action for "judicial consideration of constitutional claims and congressional enforcement of constitutional rights."[45]

In the last thirty–five years, the Supreme Court has merged those tests within a single two–part framework,[46] under *Lugar v. Edmondson Oil Co.*,[47] *Edmonson v. Leesville Concrete Co.*,[48] and *Georgia v. McCollum*[49]:

> The first inquiry is "whether the claimed [constitutional] deprivation has resulted from the exercise of a right or privilege having its source in state authority." . . . The second inquiry is whether the private party charged with the deprivation can be described as a state actor. In resolving that issue, the Court [has] found it useful to apply three principles: (1) "the extent to which the actor relies on governmental assistance and benefits"; (2)

37. Michael J. Phillips, *The Inevitable Incoherence of Modern State Action Doctrine*, 28 ST. LOUIS U. L.J. 683, 683 (1984).

38. Black, *supra* note 1, at 95.

39. LAURENCE H. TRIBE, AMERICAN CONSTITUTIONAL LAW 1149 (1978).

40. *See, e.g.*, Robert J. Glennon, Jr. & John E. Nowak, *A Functional Analysis of the Fourteenth Amendment "State Action" Requirement*, 1976 SUP. CT. REV. 221, 230.

41. Reuben, *supra* note 36, at 610.

42. *Id.* (citing Richard S. Kay, *The State Action Doctrine, the Public-Private Distinction, and the Independence of Constitutional Law*, 10 CONST. COMMENT. 329, 337–43 (1993)).

43. *See id.* at 610–11.

44. *Id.* at 611.

45. *State Action and the Public/Private Distinction*, *supra* note 10, at 1255.

46. Reuben, *supra* note 36, at 611–12.

47. 457 U.S. 922 (1982)

48. 500 U.S. 614 (1991).

49. 505 U.S. 42 (1992).

> "whether the actor is performing a traditional governmental function"; and (3) "whether the injury caused is aggravated in a unique way by the incidents of governmental authority."[50]

This so–called *Lugar–Edmonson* framework lends support to commentators who have argued that the chief concern of the state action doctrine is to balance public interests and private harms.[51] The pressing issue is determining what facts can trigger the finding of state action, a finding that "generally occurs when the complained-of conduct touches the most fundamental of constitutional concerns."[52]

A. BACKGROUND

To understand where the doctrine is today, it is important to understand from where it came. As noted above, the Supreme Court articulated the doctrine in 1883 in the *Civil Rights Cases*, invalidating the Civil Rights Act of 1875 and holding that Congress lacked the power to enact legislation regulating private racial discrimination under the Fourteenth Amendment.[53] That law penalized the private owners of places of public accommodation who discriminated based on race. Justice Joseph P. Bradley, writing for the majority, distinguished private and public wrongs, noting that where a wrongful act is not "sanctioned in some way by the state, or . . . done under state authority, [the victim's] rights remain in full force, and may presumably be vindicated by resort to the laws of the state for redress," but not by resort to the Constitution.[54]

Justice Bradley saw violations of the constitutional rights of one private actor by another as a "conceptual impossibility."[55] Theoretically, his distinction between private and public wrongs promoted the "individualist goal of self-realization . . . by protecting the sphere of private conduct from judicial inquiry," as long as the private conduct did not violate state statutes or the common law.[56] Thus, Justice Bradley found that Section 5 of the Fourteenth Amendment did not authorize Congress to regulate private conduct, writing, "[u]ntil some State law has been passed, or some state action . . . has been taken, adverse to the rights of citizens sought to be

50. *Id.* at 51 (citations omitted).
51. Reuben, *supra* note 36, at 612.
52. *Id.*
53. *State Action and the Public/Private Distinction*, *supra* note 10, at 1256.
54. *See Civil Rights Cases*, 109 U.S. 3, 17 (1883).
55. *State Action and the Public/Private Distinction*, *supra* note 10, at 1257.
56. *Id.*

protected by the fourteenth amendment, no legislation of the United States under said amendment . . . can be called into activity . . . ."[57]

In the seventy years following the *Civil Rights Cases*, the Supreme Court reworked the state action doctrine significantly.[58] The reworking reflected the Court's "concern with the failure of existing legal rules to address troubling instances of racial discrimination," ultimately signaling a dramatic shift from "formalist reasoning toward functionalist and instrumentalist reasoning."[59] The doctrine's leading critic in the mid–twentieth century was Professor Charles Black, who believed the doctrine was "the most important problem in American law."[60] He focused on the law's role in addressing systemic racism, and he argued that the law was failing to play its role because of the state action doctrine's willful blindness to nongovernmental actions.[61]

Black dedicated much of his attention to *Reitman v. Mulkey*, in which the Supreme Court considered a provision of California's Constitution that prohibited the state from enacting laws limiting a private actor's discretion in the use of his or her real property.[62] Justice Byron White, writing for the majority, adopted a functionalist and instrumentalist approach, focusing on "the necessity for a court to assess the potential impact of official action in determining whether the State has significantly involved itself with invidious discriminations."[63] The lower court had analogized California's constitutional prohibition on state enactment of antidiscrimination laws with a state statute authorizing racial discrimination, an analogy White accepted because he viewed the impact to be the same.[64]

On this basis, the Court rejected the distinction between "state action and inaction" that was at the heart of the *Civil Rights Cases* and invalidated California's provision because it encouraged or involved the state in authorizing private discrimination.[65] Black defended *Reitman* because it rejected the state action doctrine's early formalism but did not reject the doctrine altogether, a position Black shared.[66] He wanted to harmonize the

57. *Civil Rights Cases*, 109 U.S. at 13.
58. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1258.
59. *Id.* (citing Phillips, *supra* note 37, at 699–700, 734–35).
60. *See* Black, *supra* note 1, at 69.
61. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1259.
62. *Id.* at 1259–60.
63. *See* 387 U.S. 369, 380 (1967).
64. *State Action and the Public/Private Distinction*, *supra* note 10, at 1260.
65. *Id.*
66. *See* Black, *supra* note 1, at 82 (discussing Black's proposal for the rule in *Reitman*).

doctrine with the "demands of justice"[67] and thought it was insensible for the doctrine to act as an impediment to the resolution of the great problems of the day.[68]

B. MODERN INTERPRETATION

Under the current conception of the state action doctrine, the line between the public and private spheres is blurry. Scholars calling for the doctrine's abandonment have done so because they believe it is "an abuse of deduction that ignores competing rights and interests," and scholars defending the doctrine have done so because they believe it protects "individual autonomy."[69] For its part, the Supreme Court, in the 2000 landmark case *United States v. Morrison*,[70] reaffirmed the doctrine as it was articulated in the *Civil Rights Cases*.[71]

Morrison addressed a provision of the Violence Against Women Act that offered a federal remedy to victims of gender–motivated violence.[72] Writing for the majority, Chief Justice William Rehnquist said the Commerce Clause did not authorize such a provision and reviewed Congress's powers under Section 5 of the Fourteenth Amendment.[73] He acknowledged the "enduring vitality of the *Civil Rights Cases*" and adopted their description of Congress's powers under Section 5.[74] He said the provision at issue was "directed not at any State or state actor, but at individuals who have committed criminal acts motivated by gender bias."[75] As one group of commentators put it:

> [D]espite abundant congressional findings regarding disparate treatment on the basis of gender by state officials, Chief Justice Rehnquist deemed the intended remedy "simply not 'corrective in its character, adapted to counteract and redress the operation of such prohibited [s]tate laws or proceedings of [s]tate officers.'" Thus, the Court invalidated an attempt by Congress to remedy violations of equal protection—otherwise a permissible exercise

67. *State Action and the Public/Private Distinction*, *supra* note 10, at 1260.
68. *See id.*
69. *Id.* at 1261.
70. 529 U.S. 598 (2000).
71. *Id.* at 602; *see also State Action and the Public/Private Distinction*, *supra* note 10, at 1262 n.56 ("If there is a single person responsible for the current, confining idea of state action, it is Rehnquist." (quoting David J. Barron, *Privatizing the Constitution: State Action and Beyond*, *in* THE REHNQUIST LEGACY 345, 346 (Craig M. Bradley ed., 2006))).
72. *Morrison*, 529 U.S. at 601–02.
73. *Id.* at 598.
74. *Id.* at 624.
75. *Id.* at 626.

> of its enforcement power under the Fourteenth Amendment, even under the *Civil Rights Cases*—because it targeted private individuals rather than the states and state officials responsible for the violations. Regardless of whether the provision furthered the ends envisioned in the Fourteenth Amendment, it failed to satisfy the formal requirement of state action.[76]

For these and other reasons, Professor Mark Tushnet believes the state action doctrine is "distracting us from paying attention to what truly matters."[77] He and Professor Gary Peller have called for the doctrine's abandonment, rejecting the public/private distinction's logic because "[e]very exercise of 'private' rights in a liberal legal order depends on the potential exercise of state power to prevent other private actors from interfering with the rights holder," and thus "no region of social life . . . can be marked off as 'private' and free from governmental regulation."[78] Taking that argument to its logical conclusion, Tushnet says the doctrine's abandonment could "require the government to remedy de facto burdens on constitutional rights."[79] That would mean constitutional rights serve substantive interests that, "when threatened, may require action on the part of the government."[80]

Morrison is the latest word from the U.S. Supreme Court on the state action doctrine, once again making violations of constitutional rights by a private actor a "conceptual impossibility." This Article does not go as far as abandoning the doctrine, as Professors Tushnet and Geller advocate, but instead would support its reformulation to enable judges, as explained below, to balance the rights of property owners with those of property users.

C. FREE EXPRESSION AND PRIVATE SPACES

In light of that background, it might seem strange to apply the First Amendment to privately owned spaces. Doing so creates a tension between property rights and expressive rights. So far, however, those rights have coexisted relatively peacefully because "spaces traditionally understood to be public have historically been publicly owned,"[81] a reality that today is changing. New forums for public expression are developing apart from the

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76. *State Action and the Public/Private Distinction*, *supra* note 10, at 1262–63 (citations omitted).

77. *Id.* at 1263.

78. Gary Peller & Mark Tushnet, *State Action and a New Birth of Freedom*, 92 GEO. L.J. 779, 789 (2004).

79. *State Action and the Public/Private Distinction*, *supra* note 10, at 1264.

80. *Id.*

81. *Id.* at 1303.

classic public square, and their connection to state actors is tenuous, if not nonexistent.[82]

Platforms like YouTube, Facebook, and Twitter defy easy classification in this area.[83] To the extent they offer free public access and a place to engage in expressive activities, they operate as a virtual public forum—but, of course, their ownership is private. Thus, they are not unlike private shopping malls, which historically have had "dual public and private characteristics."[84] A line of cases addressing the application of federal and state free expression protections to private shopping malls has produced varied results, showing that the "balance between the values of autonomy and free speech reflects different conceptions of what makes a mall 'public'": the nature of its ownership or the nature of its use.[85]

Marsh v. Alabama,[86] decided in 1946, was the first case to address the application of free expression protections to privately owned spaces.[87] The issue before the Supreme Court was whether Alabama could punish a person who distributed religious literature in a company–owned town against the town management's wishes.[88] The Justices held that the town, which was owned and operated by the Gulf Shipbuilding Corporation, could not freely restrict expressive activity there, because the company town was the functional equivalent of a public municipality.[89] Justice Hugo Black, writing for the majority, noted that whether a private or public entity "owns or possesses the town[,] the public in either case has an identical interest in the functioning of the community in such manner that the channels of communication remain free."[90]

Twenty years later, the Supreme Court extended those principles to privately owned shopping malls.[91] In 1968, in *Amalgamated Food Employees Union Local 590 v. Logan Valley Plaza, Inc.*, the Court decided whether peaceful picketing of a business located in a private shopping center could be enjoined because it invaded the property rights of the

82. *Id.*
83. *See id.* (citing the modern shopping mall as an example).
84. *See id.*
85. *Id.* at 1303–04.
86. 326 U.S. 501 (1946).
87. *Id.* at 502.
88. *Id.*
89. *Id.* at 507.
90. *Id.*
91. *See* Amalgamated Food Emps. Union v. Logan Valley Plaza, Inc., 391 U.S. 308, 319–20 (1968).

shopping center's owners.[92] The Justices held that peaceful picketing "in a location open generally to the public" was protected by the First Amendment.[93] The Court said the shopping center served "as the community business block."[94]

After that, the Court decided *Lloyd Corp. v. Tanner* in 1972.[95] The issue was whether "the right of a privately owned shopping center to prohibit the distribution of handbills on its property when the handbilling [wa]s unrelated to the shopping center's operations."[96] The Justices narrowed *Logan Valley* by ruling that the First Amendment did not protect expressive activity in a private shopping mall unless the activity was "directly related in its purpose to the use to which the shopping center property was being put."[97]

Finally, the Court reversed *Logan Valley* in the 1976 case *Hudgens v. NLRB*,[98] holding that the First Amendment "guarantee of free expression has no part to play in a case" where the speech activities occur at a privately owned shopping center.[99] The Court held that a shopping center was not the "functional equivalent" of a municipality because it did not possess all of the attributes of one.[100] Justice Potter Stewart, writing for the majority, said a stronger showing of state action was necessary because the First Amendment is a check "on state action, not on action by the owner of private property used nondiscriminatorily for private purposes only."[101] *Lloyd Corp.* and *Logan Valley* represent a significant narrowing of the state action doctrine.

Notably, as the U.S. Supreme Court developed that line of cases, California state courts confronted similar issues,[102] developing a body of law that departed in critical ways from the federal system's formalistic approach to state action. California law is useful to consider here for that reason, as an alternative to the federal approach—and because many of the major technology companies discussed in this Article, such as Facebook and YouTube, are physically based in California and operate in the shadow

92. *Id.* at 309.
93. *Id.* at 313.
94. *Id.* at 319.
95. 407 U.S. 551 (1972).
96. *Id.* at 552.
97. *Id.* at 563 (quoting *Amalgamated Food Emps. Union*, 391 U.S. at 320 n.9).
98. 424 U.S. 507 (1976).
99. *Id.* at 507.
100. *Id.* at 520.
101. *Id.* at 519
102. *State Action and the Public/Private Distinction*, *supra* note 10, at 1305.

of its laws (although, obviously, these companies are subject to the laws of all the places where they operate).

Four years before *Logan Valley*, the California Supreme Court ruled that the First Amendment protected expressive activity in privately owned shopping malls based on their "public character."[103] Then, after the U.S. Supreme Court decided *Logan Valley* and *Hudgens*, "California was forced to rule that the First Amendment did not require mall owners to accommodate private speech."[104] That paved the way for *Robins v. Pruneyard Shopping Center*[105] in 1979, in which the California Supreme Court addressed whether soliciting signatures at a private shopping center was protected by the *state* constitution.[106] The justices answered in the affirmative, supporting more expansive state free speech rights than those offered by the First Amendment.[107]

The California Supreme Court pointed to the difference in the commands of the state and federal constitutions.[108] The California provision commanded that "[e]very person may freely speak, write and publish his or her sentiments on all subjects," while the federal provision commanded that "Congress shall make no law . . . abridging the freedom of speech."[109] Thus, the state action doctrine did not control *Pruneyard*'s outcome, and ultimately the U.S. Supreme Court affirmed *Pruneyard* in the face of a federal constitutional challenge.[110]

The issue in the federal case was whether California's constitutional provisions permitting people to exercise free speech rights at a privately owned shopping center violated either the owner's property rights under the Fifth and Fourteenth Amendments or the owner's free speech rights under the First and Fourteenth Amendments.[111] The justices held that *Tanner* did not limit a state's authority to adopt "individual liberties more expansive than those conferred by the Federal Constitution" and that states "may adopt reasonable restrictions on private property so long as [they] do not amount to a taking without just compensation."[112] This is significant because it

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103. *See* Schwartz-Torrance Inv. Corp. v. Bakery & Confectionery Workers' Union, 394 P.2d 921, 924 (Cal. 1964).

104. *State Action and the Public/Private Distinction*, *supra* note 10, at 1305.

105. 592 P.2d 341 (Cal. 1979).

106. *Id.* at 342.

107. *Id.* at 347.

108. *State Action and the Public/Private Distinction*, *supra* note 10, at 1305.

109. *Id.*

110. *Id.* (citing Robins v. Pruneyard Shopping Ctr., 447 U.S. 74, 88 (1980)).

111. *Pruneyard*, 447 U.S. at 88.

112. *Id.* at 81.

means a state does not necessarily violate property rights by protecting expressive activity on private property.[113]

Later, the California Supreme Court, in the 2001 case *Golden Gateway Center v. Golden Gateway Tenants Association*,[114] reaffirmed *Pruneyard* when it addressed whether California law requires state action as a threshold for free expression violations.[115] The court said it is required but can be satisfied when private property is "freely and openly accessible to the public."[116] This means California's state action doctrine focuses on a property's public use rather than its ownership. *Golden Gateway*, in effect echoing *Pruneyard*, cited the differences between the state and federal constitutions to account for California's divergence from federal law.[117] But, interestingly, the opinion emphasized that California's doctrinal approach, in concentrating on the public nature of a property, was consistent with the conception of state action in federal constitutional history.[118]

The California Supreme Court noted that the distinction between government and private conduct "has been a hallmark of American constitutional theory since the birth of our nation."[119] And the court remarked that this distinction serves two important purposes:

> First, this demarcation is necessary to preserve private autonomy. "[B]y exempting private action from the reach of the Constitution's prohibitions, [the state action limitation] stops the Constitution short of preempting individual liberty—of denying to individuals the freedom to make certain choices. . . . Such freedom is basic under any conception of liberty, but it would be lost if individuals had to conform their conduct to the Constitution's demands."
>
> Second, a state action limitation safeguards the separation of powers embodied in every American constitution by recognizing the limited ability of courts "to accomplish goals which are essentially legislative and political." "Without a state action limitation, the courts will possess the same authority as the legislature to limit individual freedoms, but will lack the degree of accountability which should accompany such power." As a result, absent a state action requirement, "the 'rule of law' would

113. *State Action and the Public/Private Distinction*, *supra* note 10, at 1306.
114. 29 P.3d 797 (Cal. 2001).
115. *See id.* at 809–10.
116. *Id.* at 810.
117. *See id.* at 809.
118. *See id.* at 808.
119. *Id.*

> approach in Sir Ivor Jennings' caustic but realistic phrase, 'rule by the judges alone.'"[120]

Thus, state action retains its place in California's constitutional scheme, but *Pruneyard* established—and *Golden Gateway* affirmed—that California's doctrine differs from that of the federal system. It is worth noting that very few states have followed California's lead to offer more speech protections than the First Amendment.[121] Despite speech provisions similar to California's, seventeen state supreme courts have held that a more traditional state–action theory, such as *Morrison*'s, is required to bring speech claims under their constitutions.[122] New Jersey is the only state that (to some degree) has followed California.[123] Balancing property and speech rights on a case–by–case basis, New Jersey has extended private–property speech protections to a variety of contexts, including private colleges and universities, residential communities, and hallways in residential buildings.[124]

These cases indicate that "the doctrine is still being shaped at the state level as courts continue to face difficult factual applications of their theories of state action."[125] One such application, regardless of level, involves platforms like Facebook, YouTube, and Twitter. They all share some of the characteristics of traditional public spaces, but they all are privately owned, too. The implications of their public and private characteristics are explored in the next section of this Article.

D. A MATTER OF VALUES

At the heart of any democratic legal system is a matrix of principles and values concerned with such things as equality and due process that apply generally, without regard to specific legal facts. For example, in the U.S. legal system, it is a foundational aspiration to provide equal justice under law,[126] secured chiefly through the Equal Protection Clause and the "neutrality and independence of the judiciary."[127] Similarly, underlying every legal rule or standard is a matrix of values concerned with discrete

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120. *Id.* (citations omitted).
121. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1306.
122. *Id.* at 1306–07.
123. *Id.* at 1307.
124. *See id.*
125. *Id.*
126. Richard C. Reuben, *Democracy and Dispute Resolution: The Problem of Arbitration*, 67 L. & CONTEMP. PROBS. 279, 290 (2004).
127. *Id.* at 291.

matters like property rights or free expression interests that apply when specific facts implicate them.[128] For example, subjecting a private actor to liability for a First Amendment violation creates tension between the values of autonomy and property rights and that of free expression. Put it in the context of this Article, there is tension between the autonomy and property rights of the third–party platforms (e.g. Twitter and Facebook) and the free expression rights of their users. Before addressing this tension, however, a more general discussion is necessary.

Recall that California's approach to the state action doctrine diverges from the federal system's approach as well as the approach of most state courts that have addressed state action requirements.[129] These divergent approaches reflect varying conceptions of what it means to protect expressive activities on private property and different ideas of what values the state action doctrine ought to protect.[130] California's theory may be "anomalous," but it reflects the "larger national dialogue about free expression and state action in public spaces."[131] One way to understand the divergent approaches, as noted earlier, is to focus on sources of authority.[132] California relied on its own constitution to expand free speech protections beyond those of the First Amendment.[133]

Sources of authority, however, do not fully account for the divergence.[134] After all, the majority of state constitutions around the country contain speech and press provisions "virtually identical" to California's, and yet the majority have rejected California's approach.[135] For example, New York's constitution is so similar that the California Supreme Court declared in *Golden Gateway* that New York's constitutional

128. *See* Jordan Daci, *Legal Principles, Legal Values and Legal Norms: Are They the Same or Different?*, 2010 ACADEMICUS–INT'L SCI. J. 109, 110–11 (2010).

129. *State Action and the Public/Private Distinction*, *supra* note 10, at 1308.

130. *Id.*

131. *Id.*

132. *Id.*

133. *Id.*

134. *See also* Stanley H. Friedelbaum, *Private Property, Public Property: Shopping Centers and Expressive Freedom in the States*, 62 ALB. L. REV. 1229, 1261 (1999) ("Little can be gained by contrasting the claimed nonspecificity of the First Amendment's wording with the greater protection said to be found in state expressive freedom guarantees.").

135. *State Action and the Public/Private Distinction*, *supra* note 10, at 1308; *see also* Gregory C. Sisk, *Uprooting the* Pruneyard, 38 RUTGERS L.J. 1145, 1163–65 (2007) (highlighting the similarity of free speech clauses in the constitutions of California, New York, and Iowa).

history was relevant to its own interpretation of California's constitution.[136] Meanwhile, New York, by contrast, characterized California's state action approach as "hardly persuasive authority."[137]

California's approach also borrows from First Amendment law.[138] As discussed above, the early California cases made use of the First Amendment, and a more recent California case, *Fashion Valley Mall v. NLRB*, decided in 2007, was framed as an application of *Pruneyard*,[139] which the California Supreme Court described as an extension of the early cases' "First Amendment-based jurisprudence."[140] More broadly, the California Supreme Court has referred in its opinions to fundamental First Amendment concepts,[141] likening the private mall in *Fashion Valley*, for example, to "sidewalks of the central business district which, have immemorially been held in trust for the use of the public."[142] Such language echoes *Hague v. Committee for Industrial Organization*, in which the U.S. Supreme Court defined traditional public forums.[143] All meaning: the California Supreme Court's position does not appear to be that the state constitution recognizes new types of public spaces—rather, it appears to be that shopping malls are new public forums, as that concept is understood vis–à–vis the First Amendment.[144]

Of course, this does not mean *Pruneyard*, *Golden Gateway*, and *Fashion Valley* are primarily or only First Amendment cases.[145] It means simply that there is appreciable overlap between California and federal doctrine in this area, an overlap that illustrates the "problem of defining public space[s] in today's world."[146] The U.S. Supreme Court focuses on ownership to distinguish private and public property,[147] while the California Supreme Court focuses on how a space is used.[148] These opposing conceptions of "public" are the result of conscious choices based partly on

136. *See* Golden Gateway Ctr. v. Golden Gateway Tenants Ass'n, 29 P.3d 797, 804–05 (Cal. 2001).

137. SHAD All. v. Smith Haven Mall, 488 N.E.2d 1211, 1214 n.5 (N.Y. 1985).

138. *See* Fashion Valley Mall, L.L.C. v. NLRB, 172 P.3d 742, 749 (Cal. 2007) (citing Gerawan Farming, Inc. v. Lyons, 12 P.3d 720 (Cal. 2000)).

139. *Id.* at 745.

140. *State Action and the Public/Private Distinction*, *supra* note 10, at 1309.

141. *Id.*

142. *Id.* (citing *Fashion Valley Mall*, 172 P.3d at 745).

143. *See* Hague v. Comm. for Indus. Org., 307 U.S. 496, 515–16 (1939).

144. *State Action and the Public/Private Distinction*, *supra* note 10, at 1309–10.

145. *Id.* at 1310.

146. *Id.*

147. *Id.*

148. *Id.*

the values underlying them.[149] The U.S. Supreme Court has chosen to emphasize the values of autonomy and property rights, and the California Supreme Court has chosen to emphasize the free speech rights of "individual speakers against powerful private actors."[150] But these values do conflict in numerous ways.

On the one hand, California's approach pits the expression rights of patrons and owners against one another in a way that the U.S. Supreme Court's approach does not.[151] First, requiring mall owners to allow expressive activities on their property could interfere with the owners' marketing activities that are essential to the mall's commercial purpose.[152] This might put the owners in the discomfiting position of serving as the "host for [their] own roasting."[153] Second, to the extent that mall owners are required to host speech they find disagreeable, California's approach could compel the owners to promote beliefs, at least indirectly, that they do not share, creating a potential conflict with post–*Pruneyard* cases holding that states cannot require private actors to provide forums for expression that those actors find disagreeable.[154]

On the other hand, it is not clear that the U.S. Supreme Court's approach offers a better way to balance the competing values. One team of commentators put it this way:

> As shopping centers continue to adopt more characteristics of the town square, a theory that cannot protect rights in these locations is problematic in light of our nation's history of protecting free discourse in the spaces where such speech actually occurs. The more accessible owners make their property, the more public it becomes; California's approach is appealing because it recognizes that even private property can assume public characteristics. Even conceding the difficulty of balancing the rights of owners and speakers, the bright-line rule of government ownership can become a simplistic and "absurd basis for choosing between the two liberties," because conditioning free speech protections on the

149. *Id.* at 1310–11.

150. *Id.* at 1311.

151. *Id.* at 1312.

152. Gregory C. Sisk, *Returning to the* Pruneyard*: The Unconstitutionality of State-Sanctioned Trespass in the Name of Speech*, 32 HARV. J.L. & PUB. POL'Y 389, 396 (2009).

153. *Id.*

154. *State Action and the Public/Private Distinction*, *supra* note 10, at 1312 (referencing Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. Boston, Inc., 515 U.S. 557 (1995)).

> identity of the property owner provides an artificially clear line that can minimize the merits of competing rights claims.[155]

Such arguments are meritorious and animate Part IV's suggestions for a state–action theory suitable for the digital world, where so much speech on matters of public concern occurs in privately owned spaces like Facebook and YouTube. A state–action theory for private spaces can have serious implications for the ability to speak freely online, whether the source of authority is state or federal. In fact, the scope of a modern state–action theory can make the difference between speaking out and not. Thus, there is a need for a debate over its proper scope because "[a]s the public becomes more private, and the private becomes more public, the contours of the state action doctrine may come to define the contours of our most basic constitutional rights."[156]

E. PUBLIC FORUM LAW

This Section explores public forum law to analyze the similarity, if any, between public forums—property historically associated with the exercise of expressive rights—and third–party platforms like Facebook and Twitter. The analysis in this Section is general in nature and provides the framework for evaluating the public character of private property that will be used in the next part to consider whether the state action doctrine, in its current form, forecloses the First Amendment's application to third–party platforms.

Pruneyard relied on the functional equivalence of a privately owned shopping center and a traditional public forum (i.e., the "downtown" or "central business district").[157] The opinion emphasized the center's "open and unrestricted invitation to the public to congregate freely," thereby exempting "an individual homeowner" from the ambit of California's free expression provision, "because individual homes are not freely and openly accessible to the public."[158] As discussed above, this means that the application of California's free expression provision on private property depends on "the public character of the property."[159] *Golden Gateway* affirmed this approach by holding that "the actions of a private property

155. *Id.* at 1313 (citations omitted).
156. *Id.* at 1250 (citations omitted).
157. *See* Golden Gateway Ctr. v. Golden Gateway Tenants Ass'n, 29 P.3d 797, 809–10 (Cal. 2001) (citing Robins v. Pruneyard Shopping Ctr., 592 P.2d 341, 346 (Cal. 1979)).
158. *Id.* at 809.
159. *Id.*

owner constitute state action for purposes of California's free speech clause only if the property is freely and openly accessible to the public."[160]

It is worthwhile, then, to explore the law of public forums and to consider the similarity between third–party Internet platforms, such as Facebook and Twitter, and public forums, such as public sidewalks and parks. The goal is to understand the extent of their functional equivalence. This is also valuable because the California Supreme Court, which referred to the public character of private property as a necessary condition of state action, followed lower court decisions that used *Pruneyard* to compare various types of private property and public forums[161]:

> [O]ur Courts of Appeal have consistently held that privately owned medical centers and their parking lots are not functionally equivalent to a traditional public forum for purposes of California's free speech clause because, among other things, they are not freely open to the public. Our lower courts have also suggested that an apartment complex does not resemble a traditional public forum because it "is a place where the public is generally excluded."[162]

Under *Hague* and its progeny, the right to express your views in public places is fundamental to a free society, and certain public property is so historically associated with the exercise of expressive rights that the property cannot be closed, not entirely, to constitutionally protected expression—to speeches, meetings, parades, protests, and the like.[163] The basic reason is that the property may be owned by the government, but it is held "in trust" for the public.[164] That means members of the public should have as much right to speak there as they would on their own property.[165] Likewise, when the government chooses to open forums to the public, it should not be permitted to skew public debate there by regulating viewpoints.[166] But on most public property, the government should be permitted "to regulate speech [there] in order to make its use of the property more efficient" (after all, speech can distract people, interfere with traffic flow, and so on—thus, content–neutral time, place, and manner limitations

160. *Id.* at 810.
161. *Id.*
162. *Id.* (citations omitted).
163. *See* Hague v. Comm. for Indus. Org., 307 U.S. 496, 514 (1939).
164. *Id.*
165. VOLOKH, *supra* note 11, at 603.
166. *Id.*

are permissible).[167] Their historical significance is what makes public forums special, as explained by Justice Owen Roberts in *Hague*: "Wherever the title of streets and parks may rest, they have immemorially been held in trust for the use of the public and, time out of mind, have been used for purposes of assembly, communicating thoughts between citizens, and discussing public questions."[168]

Thus, the U.S. Supreme Court has divided public property into five categories.[169] The first is the traditional public forum, which includes "government property that has traditionally been available for public expression," such as sidewalks and parks.[170] The second is the designated public forum, which includes "'government property that has [been] . . . intentionally opened up for [the] purpose' of being a public forum."[171] The third is the limited public forum, which includes government property "limited to use by certain groups or dedicated solely to the discussion of certain subjects."[172] The fourth is the nonpublic forum, which includes all other government–owned property not used by the government for speaking.[173] And, finally, the fifth is "[n]ot a forum at all," which includes government property that the government uses to speak (e.g. through a government–owned television channel).[174]

Importantly, expressive activities in traditional and designated public forums are subject to reasonable time, place, and manner regulations.[175] To be constitutional, such regulations must be content neutral,[176] narrowly tailored,[177] serve a significant government interest,[178] and leave open ample

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167. *Id.*

168. 307 U.S. at 515.

169. VOLOKH, *supra* note 11, at 601.

170. *Id.*

171. *Id.* (citations omitted).

172. *Id.* Earlier cases called this category a designated public forum and said the test was the one used when the government acted as sovereign, except the government could limit such a forum to the purposes for which it was created. *Id.* In practice, however, that was effectively the same as applying the "reasonable-and-viewpoint-neutral test" (after all, speaker and subject–matter limitations were permitted). *Id.* More recent cases, such as *Christian Legal Society Chapter of the University of California v. Martinez*, 561 U.S. 661, 662 (2010), and *Pleasant Grove City v. Summum*, 555 U.S. 460, 461 (2009), have treated the limited public forum as a separate category. VOLOKH, *supra* note 11, at 601.

173. VOLOKH, *supra* note 11, at 602.

174. *Id.* at 603.

175. *See* Perry Educ. Ass'n v. Perry Local Educators' Ass'n, 460 U.S. 37, 45 (1983).

176. *See, e.g.,* Clark v. Cmty. for Creative Non-Violence, 468 U.S. 288, 295 (1984).

177. *See, e.g.,* Ward v. Rock Against Racism, 491 U.S. 781, 791 (1989).

178. *See, e.g.,* Watchtower Bible & Tract Soc'y of N.Y., Inc. v. Vill. of Stratton, 536 U.S. 150, 175 (2002).

alternative forums or channels of communication for protected expression.[179] Meanwhile, expressive activities in limited and nonpublic forums can be subject to restrictions that are both reasonable and viewpoint neutral.[180] In some such forums, like military bases and prisons, which are nonpublic, the government enjoys even broader authority to restrict expressive activities.[181] And in the fifth public–property category—"not a forum at all"—the government acts as the speaker and may decide what speech to allow, even based on viewpoint.[182]

It is important to keep these concepts in mind when considering, in the next part of this Article, the propriety of the First Amendment's application to third–party platforms like Facebook and Twitter. Whether such platforms are seen as the functional equivalent of a public forum is legally significant and instructive in evaluating the public character of privately owned property.[183]

III. APPLYING THE FIRST AMENDMENT TO THIRD–PARTY PLATFORMS

As noted in Part I, the Internet's architecture relies on intermediaries to transport, host, and index content,[184] enabling Internet users to speak online—and giving the intermediaries tremendous power to shape the

179. *See, e.g.,* Heffron v. Soc'y for Krishna Consciousness, 452 U.S. 640, 648 (1981).

180. *See, e.g.,* Christian Legal Soc'y Chapter of the Univ. of Cal. v. Martinez, 561 U.S. 661, 679 (2010).

181. *See generally* Thornburgh v. Abbott, 490 U.S. 401 (1989) (prisons); Brown v. Glines, 444 U.S. 348 (1980) (military bases).

182. *See, e.g.,* Ark. Educ. Television Comm'n v. Forbes, 523 U.S. 666, 667, 676–78 (1998).

183. It is useful to say a few words about 42 U.S.C. § 1983 liability for private actors. A comprehensive discussion is beyond the scope of this Article, but the statute authorizes the filing of a civil action against a state actor for a deprivation of civil or constitutional rights. Jeremy Brown, *Pan, Tilt, Zoom: Regulating the Use of Video Surveillance of Public Places*, 23 BERKELEY TECH. L.J. 755, 780 n.166 (2008). Although the statute's language does not include any immunities, the U.S. Supreme Court has granted immunity to government officials where there exists a "tradition of immunity . . . so firmly rooted in the common law and . . . supported by such strong policy reasons" that Congress would not have abolished that tradition upon enacting § 1983. *See* Wyatt v. Cole, 504 U.S. 158, 164 (1992) (quoting Owen v. City of Indep., 445 U.S. 622, 637 (1980)). Immunity reflects the government's interest in managing the risk of "distraction of officials from their governmental duties" and of "deterrence of able people from public service." *See* Harlow v. Fitzgerald, 457 U.S. 800, 816 (1982). This is relevant because it is possible for private actors like YouTube and Facebook to be deemed state actors under § 1983.

184. *See* Ardia, *supra* note 2, at 377.

public discourse.[185] Third–party platforms like Facebook and Twitter conduct "private worldwide speech 'regulation'" as they draft and enforce their respective platforms' content rules.[186] "They decide what types of content may be posted, whether to remove certain content in response to user requests, whether to remove content that allegedly violates the law, and how to display and prioritize various content types using algorithms, all against the background of democratic values and business interests."[187] The platforms are developing what amounts to a de facto free speech jurisprudence, and the crux of this Article is an exploration of whether the state action doctrine permits, and ought to permit, the First Amendment's application to such platforms. This Part employs the concepts explored in the foregoing Sections, and it includes both descriptive and normative perspectives.

The focus of this analysis is limited to one type of Internet intermediary: third–party platforms.[188] To compare Internet intermediaries and how they facilitate online speech, Professor David Ardia developed a trifurcated classification system for them, including: (1) *communication conduits*, which transport data across the network; (2) *content hosts*, which store, cache, or otherwise provide access to content; and (3) *search and application providers*, which index or filter content without necessarily hosting it.[189] The second classification includes web–hosting services and third–party platforms[190] that provide access to content by operating between primary publishers and audiences.[191] More specifically, web–hosting services allow users to host their own webpages, and third–party platforms—like Facebook and Twitter—offer various services to users that enable them to share content and network socially.[192] Content hosts are the focus of this Article because they have knowledge of, and control over, the

185. *See id.* Also playing a major role are common law principles of intermediary liability and Section 230 of the Communications Decency Act. *See, e.g.*, Aniket Kesari, Chris Hoofnagle & Damon McCoy, *Deterring Cybercrime: Focus on Intermediaries*, 32 BERKELEY TECH. L.J. (forthcoming 2017); Shahrzad T. Radbod, *Craigslist—A Case for Criminal Liability for Online Service Providers?*, 25 BERKELEY TECH. L.J. 597 (2010). They are worthy of discussion, but they are not the focus of this Article.

186. Benesch & MacKinnon, *supra* note 4.

187. *See generally* Jonathan Peters, *All the News That's Fit to Leak*, *in* TRANSPARENCY 2.0: DIGITAL DATA AND PRIVACY IN A WIRED WORLD 117, 117–29 (Charles N. Davis & David Cuillier eds., 2014).

188. *See* Ardia, *supra* note 2, at 386.

189. *Id.* at 386–87.

190. *Id.* at 387.

191. *Id.* at 388–89.

192. *See id.* at 389.

content of the speech they intermediate.[193] Content hosts—and specifically third–party platforms—have billions of users and "are many speakers' principal means of online communication."[194] Thus, content hosts truly stand to operate as arbiters of free expression online.[195] As such, the rest of this Article considers whether the state action doctrine permits application of the First Amendment to third–party platforms.

A. TO SAY WHAT THE LAW IS

According to the rules laid out in *Hudgens* and *Morrison*, as well as those laid out in the *Lugar–Edmonson* framework, the communications activities on third–party platforms would not satisfy state action requirements for federal purposes.[196] *Morrison* reaffirmed the narrow and

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193. *See id.*

194. *See Third-Party Platforms*, ELEC. FRONTIER FOUND., https://www.eff.org/free-speech-weak-link#platforms (last visited Sept. 17, 2017).

195. By contrast, communication conduits have no direct knowledge of, and very limited control over, the content of the speech they facilitate. Ardia, *supra* note 2, at 387. And search and application providers have limited knowledge of, and limited control over, the content of the speech they intermediate, insofar as search engines and filtering software select search results based on neutral computer algorithms and thematic preferences that represent the companies' judgments about what information to present and how to do so. Eugene Volokh, *First Amendment Protection for Search Engine Search Results*, VOLOKH CONSPIRACY (May 9, 2012, 2:37 PM), http://www.volokh.com/2012/05/09/first-amendment-protection-for-search-engine-search-results/.

196. *See* United States v. Morrison, 529 U.S. 598, 599 (2000); Hudgens v. NLRB, 424 U.S. 507, 519 (1976). It is possible, but not plausible, that a court would use the *Lugar–Edmonson* framework to find state action. The chief concern would be the three principles that guide the analysis of the second step. To satisfy the first principle, the argument would be that content hosts rely on governmental assistance and benefits on the theory that, but for the government–financed research that led to ARPANET, there would be no Internet. This is likely not a winning argument because other than the ancestor connection, content hosts are independent from the government. In addition, from a policy point of view, it is not sensible to allow an actor's mixed public–private origins to be sufficient to satisfy the principle that the actor relies on governmental assistance and benefits. Ardia, *supra* note 2, at 377. In the case of content hosts, it ignores the totality of the circumstances that today the Internet exists on a layered architecture of "privately owned Web sites, privately owned servers, privately owned routers, and privately owned backbones." *Id.* Because of the federal approach's formalism, ownership is key. Next, to satisfy the second principle, the argument would be that content hosts are performing a traditional governmental function on the theory that the government has played a role in the online environment by supporting its creation. However, third–party Internet platforms store, cache, or otherwise provide access to content, operating between primary publishers and their audiences. That is not a traditional government function in the offline or online world. Finally, to satisfy the third principle, the argument would be that the injury caused—the deprivation of free speech interests—is aggravated in a unique way by the incidents of governmental authority on the theory that, but for the government–financed research that led to ARPANET and later the

traditional approach articulated in the *Civil Rights Cases*, which treated the violation of the constitutional rights of one private actor by another as a "conceptual impossibility."[197] *Hudgens*, meanwhile, reversed a line of cases extending state action to private actors.[198] Justice Potter Stewart, writing for the majority, said the First Amendment "has no part to play in a case" where the expressive activities occur at a privately owned shopping center.[199] The Court said such a center is not "functionally similar" to a municipality because it does not possess all of the attributes of one.[200] To argue that a shopping center is "dedicated to certain types of public use" because it is "open to the public" and "serves the same purposes as a 'business district' of a municipality" is to go too far.[201] Under *Hudgens*, the "Constitution by no means requires such an attenuated doctrine of dedication of private property to public use."[202]

Hudgens also dismissed the applicability of the theoretically close *Marsh* decision, which involved a company town with "all of the attributes of a state-created municipality" that exercised "semi-official municipal functions as a delegate of the State."[203] The company town's owner, in effect, was performing "the full spectrum of municipal powers and stood in the shoes of the State."[204] In the context of third–party platforms, "there is no comparable assumption or exercise of municipal functions or power."[205] They perform a variety of functions to facilitate speech on blogging sites like Tumblr, social networks like Facebook, photo–hosting services like Flickr, and video–hosting services like YouTube.[206] They play a crucial role in the distribution of speech and in facilitating a "speaker's broad reach and

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Internet, there would have been no injury at all. However, the Internet was designed to be distributed and decentralized, which means platforms are not required to seek the approval of any central authority to host content. In that sense, the platforms have virtual free will, and thus the responsibility for their actions cannot extend to the government. All of that said, it is important to note that these results come from applications of the law as it exists, not how it ought to be. For a discussion of how the law ought to be, see *infra* Section III.B.

197. *State Action and the Public/Private Distinction*, *supra* note 10, at 1257; *see also Morrison*, 529 U.S. at 599.

198. *Hudgens*, 424 U.S. at 507.

199. *Id.* at 521.

200. *Id.* at 519.

201. *Id.* at 519 (quoting Lloyd Corp. v. Tanner, 407 U.S. 551, 568–69 (1972)).

202. *Id.*

203. *Id.*

204. *Id.*

205. *See id.*

206. *See* Ardia, *supra* note 2, at 388.

a listener's varied choices."[207] And, from a technological standpoint, they store, cache, or otherwise provide access to Internet content, operating between speakers and their audiences.[208] But despite their significance, they certainly do not have all of the attributes of a municipality that the U.S. Supreme Court required under *Marsh* for state action, such as "residential buildings, streets, a system of sewers, a sewage disposal plant and a 'business block' on which business places are situated."[209] For these reasons, under *Hudgens* and *Morrison*, as well as *Marsh*, the federal state action doctrine would foreclose the First Amendment's application to third–party platforms.

The same result can be reached under the *Lugar–Edmonson* framework, lending support to commentators who have said the doctrine's chief concern is to balance public interests and private harms.[210] The framework requires a two–step inquiry: (1) to determine "whether the claimed constitutional deprivation has resulted from the exercise of a right or privilege having its source in state authority";[211] and (2) to determine "whether the private party charged with the deprivation can be described as a state actor."[212] Under the second step, three principles are relevant: (1) "the extent to which the actor relies on governmental assistance and benefits;" (2) "whether the actor is performing a traditional governmental function;" and (3) "whether the injury caused is aggravated in a unique way by the incidents of governmental authority."[213]

To apply that framework and those principles in the context of third–party platforms, consider a February 2011 incident when Facebook removed a drawing posted by the New York Academy of Art to its Facebook page that depicted a topless woman.[214] Imagine the Academy wanted to file a legal complaint. The creation and public exhibition of art is protected First Amendment activity, so the first step under the *Lugar–Edmonson* framework would be satisfied: the "deprivation has resulted from the exercise of a right . . . having its source in state authority."[215] The second step, however, is a different story. In other words, Facebook could

207. *Id.* at 389.
208. *Id.* at 387.
209. *See* Marsh v. Alabama, 326 U.S. 501, 502 (1946).
210. Reuben, *supra* note 36, at 612.
211. Edmonson v. Leesville Concrete Co., 500 U.S. 614, 620 (1991).
212. Georgia v. McCollum, 505 U.S. 42, 51 (1992).
213. *Id.*
214. *See* Adrian Chen, *How to Get Boobs on Facebook*, GAWKER (Feb. 19, 2011, 1:17 PM), http://gawker.com/5765057/how-to-get-a-boob-on-facebook.
215. *See McCollum*, 505 U.S. at 51.

not be described as a state actor, because it does not satisfy the three principles under the framework's second step.

First, Facebook does not rely to any appreciable extent on "governmental assistance and benefits."[216] Although government–financed researchers planted the Internet's seeds, and the company benefits today from certain government–created tax incentives, Facebook is otherwise independent from the government. The vast majority of the company's revenue comes from advertising,[217] and its other major sources of revenue have included private investments and its 2012 initial public offering.[218] In addition, the company is managed by a group of executives and directors, all free from government assistance or interference, except for laws and regulations of general applicability (e.g. rules governing the sale of securities).[219]

Second, Facebook is not "performing a traditional governmental function"[220] by storing, caching, or providing access to content.[221] The government traditionally has played no such role in the online environment. Here, the closest offline analogs are bookstores and libraries, which intermediate all manner of print publications, from books to pamphlets and magazines—and beyond.[222] Public archives are a possible analog, too. The government traditionally has not owned or operated book or media stores, and even though public libraries receive government funding and are staffed by civil servants, in effect making their operation a governmental function, they are distinguishable from third–party platforms because such libraries are governed by a board that serve the public interest.[223] The board's mission is critical to the libraries' functioning, and there is no equivalent for third–party platforms.[224] Similarly, public archives are operated to serve the

216. *See id.*

217. Anita Balakrishnan, *Facebook Ad Revenue Shoots Up 53%, Sending Shares Climbing*, CNBC (Feb. 2, 2017, 11:16 AM), http://www.cnbc.com/2017/02/01/facebook-earnings-q4-2016.html.

218. Paul Vigna, *What's Facebook Really Worth? Try $13.80*, WALL ST. J. (May 25, 2012, 1:14 PM), https://blogs.wsj.com/marketbeat/2012/05/25/whats-facebook-really-worth-try-13-80/.

219. *See* Owen Thomas, *Here Are All the Top Executives Who Actually Run Facebook*, BUS. INSIDER (Aug. 2, 2012, 3:10 PM), http://www.businessinsider.com/facebook-senior-management-team-2012-8.

220. *McCollum*, 505 U.S. at 51.

221. Ardia, *supra* note 2, at 387.

222. *Id.* at 388.

223. RICHARD E. RUBIN, FOUNDATIONS OF LIBRARY AND INFORMATION SCIENCE 299 (2000).

224. *See id.*

public interest, and many of the documents they house are required by law to be preserved and publicly accessible (e.g. under the Presidential Records Act). That is not true for the data hosted by third–party platforms.

Third, "the injury caused"—the deprivation of free speech rights—"is [not] aggravated in a unique way by the incidents of governmental authority."[225] In fact, it is not aggravated at all by government. Facebook's content–policy team is led by employees,[226] and working under them are content moderators, mostly independent contractors, who review complaints about content that allegedly violates the platform's rules.[227] At the time of the incident involving the New York Academy of Art, those teams were responding to removal requests by applying rules set out in Facebook's "Operations Manual for Live Content Moderators," produced by a private consulting firm.[228] After removing the drawing posted by the Academy, Facebook apologized and said the removal was its own mistake.[229] In other words, any injury was caused by Facebook or its agents. For these reasons, under the *Lugar–Edmonson* framework, the state action doctrine would foreclose the First Amendment's application to third–party platforms.

Importantly, Facebook is not unique. This Article uses Facebook as an example because it is the largest third–party platform, but it would be possible to substitute any number of other platforms, such as Twitter, YouTube, or Flickr, in place of Facebook. Twitter, especially, has seen its share of recent content–related controversies—from the bullying of actress–comedian Leslie Jones that prompted the microblogging site to ban Milo Yiannopoulos, to the use of Twitter to spread false and misleading claims during the 2016 presidential election.[230] In any case, there are differences among the third–party platforms but, at a high level of abstraction, they all serve the same purposes. They store, cache, or otherwise provide access to

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225. *See McCollum*, 505 U.S. at 51.

226. *See Community Standards*, FACEBOOK, https://www.facebook.com/communitystandards/ (last visited Dec. 22, 2017).

227. Jeffrey Rosen, *The Delete Squad*, NEW REPUBLIC (Apr. 28, 2013), https://newrepublic.com/article/113045/free-speech-internet-silicon-valley-making-rules.

228. *See id.*

229. *Id.*

230. *See* Mike Isaac, *Twitter Bans Milo Yiannopoulos in Wake of Leslie Jones's Reports of Abuse*, N.Y. TIMES (July 20, 2016), https://www.nytimes.com/2016/07/20/technology/twitter-bars-milo-yiannopoulos-in-crackdown-on-abusive-comments.html; Donie O'Sullivan, *Fake News Rife on Twitter During Election Week, Study from Oxford Says*, CNN MONEY (Sept. 28, 2017, 2:06 PM), http://money.cnn.com/2017/09/28/media/twitter-fake-news-election-study/index.html.

Internet content,[231] and they offer a variety of services to users that enable them to share content and network socially.[232] There is no doubt they have radically democratized publishing. And, for now, there is no doubt that the state action doctrine does not permit the First Amendment's application to such platforms.

B. TO SAY WHAT THE LAW OUGHT TO BE

As online communication continues to evolve,[233] and as content hosts continue for many people to be the principal means of public communication,[234] a state action theory that fails to protect free speech interests in such spaces is problematic—especially "in light of our nation's history of protecting free discourse in the spaces where such speech actually occurs."[235] The private is becoming more public, and thus the state action doctrine may come to define the contours of our fundamental rights.[236] That being said, a state action theory that fails to protect the values of autonomy and property rights is equally problematic. It would preempt individual liberty, insofar as it would deny property holders the "freedom to make certain choices," such as how a platform wants to operate and the types of speech it wants to host.[237] That freedom is fundamental to any conception of liberty and would be lost if platforms had to comply strictly with First Amendment requirements.[238] With these concerns in mind, the goal of this section is to articulate a state action theory suitable for a digital world "where public title and public use overlap with less frequency."[239]

It is tempting to adopt California's more liberal approach to state action because of its sensitivity to free expression interests. After all, the expressive uses of third–party platforms can be consequential. An anonymous blogger covering police corruption might use a hosting service like Blogger to share what she knows with the world.[240] A group with unpopular views might assemble on a social networking site like Facebook

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231. Ardia, *supra* note 2, at 387.
232. *See* ELEC. FRONTIER FOUND., *supra* note 194.
233. *See* Rosen, *supra* note 8, at 260.
234. *See* ELEC. FRONTIER FOUND., *supra* note 194.
235. State *Action and the Public/Private Distinction*, *supra* note 10, at 1313 (citing Hague v. Comm. for Indus. Org., 307 U.S. 496, 515 (1939)).
236. *Id.* at 1250.
237. Golden Gateway Ctr. v. Golden Gateway Tenants Ass'n, 29 P.3d 797, 808 (Cal. 2001).
238. *Id.*
239. *State Action and the Public/Private Distinction*, *supra* note 10, at 1312.
240. Ardia, *supra* note 2, at 388.

to debate those views.[241] Citizen journalists might monitor government power by publishing photos and videos on hosting sites like Flickr and YouTube.[242] Activists might organize protests using Twitter. [243]

Drawing on the ideas of Professor Thomas Emerson, such uses of third–party platforms stand to facilitate self–fulfillment by allowing users to express themselves; to advance knowledge and discover truth by debating ideas and sharing content with one another; to achieve a more stable and adaptable community by being exposed to more ideas and developing greater tolerance; and to allow users to be involved in the democratic decision–making process by holding those in power accountable for their actions.[244] Indeed, the accountability of elected officials "interrelates with participation, in that government accountability makes individual and public participation meaningful."[245] Thus, all of those uses of third–party platforms illuminate the value of free expression to the individual (i.e. the platform user) and the value of free expression to society as a whole (i.e. all citizens).

A state action theory suitable for the digital world ought to respect the importance of free expression as a means to personal development and self–fulfillment—and the role of content hosts in providing access to such expression. Just as a liberal approach to state action threatens a platform's autonomy and property rights, a traditional approach that fails to protect expression where it actually occurs[246] can be an "affront to the dignity" of an individual user.[247] After all, without the freedom to search for truth and discuss questions of right and wrong, individuals are placed, as Emerson writes, in the "arbitrary control of others."[248]

Further, a state action theory suitable for the digital world ought to respect the freedoms of thought, discussion, and investigation as goods in their own right, as well as the idea that society benefits from an open exchange of ideas.[249] Whether or not the truth *always* prevails, it will *never* prevail in a legal system that fails to protect the online marketplace for

241. *Id.*
242. *Id.*
243. *Id.*
244. THOMAS I. EMERSON, THE SYSTEM OF FREEDOM OF EXPRESSION 6–7 (1970).
245. Reuben, *supra* note 126, at 288.
246. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1313 (citing Hague v. Comm. for Indus. Org., 307 U.S. 496, 515 (1939)).
247. EMERSON, *supra* note 244, at 6.
248. *Id.*
249. *See generally* JOHN STUART MILL, ON LIBERTY (David Bromwich & George Kateb eds., 2003) (1859).

expression. This general idea has factored prominently in the case law of democracies worldwide, from the *Handyside* case in the European Court of Human Rights to the *Abrams* case in the U.S. Supreme Court.[250] Moreover, it is not unreasonable to look at third–party platforms as staples in "the promotion of civil society," the "space between purely governmental and purely private affairs," where a great deal of "societal interaction" takes place.[251] The interactions in that space encourage "cooperation, reciprocation, and a sense of common good among citizens at all levels of national life,"[252] an encouragement that would be impossible but for free expression—the exercise of which occurs increasingly via third–party platforms. This is an important point because, as Professor Robert Putnam found, civil society is "just as important to the consolidation of a healthy democracy as properly functioning political institutions."[253]

A state action theory that is blind to the value of free expression to the individual, the value of free expression to society, the value of civil society to democracy, and the indispensability of third–party platforms to all of the above would surely "distract[] us from paying attention to what truly matters."[254] The federal state action theory is so blind in the context of third–party platforms. But so is the California theory, which supports more expansive free expression rights than those afforded by the First Amendment. Recall that its theory focuses on a private property's public use rather than its ownership, and in evaluating a private property's public character, *Pruneyard* relied on the property's functional equivalence to traditional public forums.

At a glance, it appears possible for third–party platforms to satisfy California's requirements. In many ways, platforms have been replacing traditional public forums, the public streets and parks that "have immemorially been held in trust for the use of the public and, time out of mind, have been used for purposes of assembly, communicating thoughts between citizens, and discussing public questions."[255] The likes of Facebook and Twitter have not been held in trust for the public's use, because they are privately owned, but they have been used—and dedicated

250. *See* Abrams v. United States, 250 U.S. 616, 628 (1919); Handyside v. United Kingdom, 24 Eur. Ct. H.R. (ser. A) at 18–19 (1976).

251. Reuben, *supra* note 126, at 291–92.

252. *Id.* at 292.

253. *Id.*

254. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1263 (quoting Professor Mark Tushnet).

255. *Hague*, 307 U.S. at 515.

to—various expressive purposes, and they have been "freely and openly accessible to the public."[256] Consider the leading platforms' policy statements: Google says it "aim[s] to offer a platform for free expression" and that it has a "bias in favor of people's right to free expression in everything [it does]."[257] Former Twitter CEO Dick Costolo once said, "We think of Twitter as the global town hall" and the "free speech wing of the free speech party."[258] Facebook says it "give[s] people the power to share and make the world more open and connected" and to "see the world through the eyes of others."[259] And YouTube says it "provides a forum for people to connect, inform, and inspire others across the globe."[260]

The problem is that the U.S. Supreme Court has characterized traditional public forums as "physical property owned or controlled by the government,"[261] so narrowly defining their boundaries that there is little, if any, room for the recognition of new traditional public forums, such as third–party platforms.[262] That problem is exemplified by *International Society for Krishna Consciousness v. Lee*,[263] in which the Court held that airports were not traditional public forums.[264] In light of the "lateness with which the modern air terminal has made its appearance," the Court wrote, "it hardly qualifies for the description of having 'immemorially . . . time out of mind' been held in the public trust and used for purposes of expressive activity."[265] Similarly, in *Perry Education Association v. Perry Local Educators' Association*, the Court concluded that traditional public forums arise "by long tradition or by government fiat."[266] No Internet platform currently could be a product of long tradition, and even though theoretically this could one day be the case, the Supreme Court's characterization of

256. Golden Gateway Ctr. v. Golden Gateway Tenants Ass'n, 29 P.3d 797, 810 (Cal. 2001).

257. Rachel Whetstone, *Free Expression and Controversial Content on the Web*, GOOGLE (Nov. 14, 2007), http://googleblog.blogspot.com/2007/11/free-expression-and-controversial.html.

258. Laura Sydell, *On Its 7th Birthday, Is Twitter Still the 'Free Speech Party'?*, NPR (Mar. 21, 2013, 2:57 AM), http://www.npr.org/blogs/alltechconsidered/2013/03/21/174858681/on-its-7th-birthday-is-twitter-still-the-free-speech-party.

259. FACEBOOK, *supra* note 226.

260. Marc Aaron Melzer, *Copyright Enforcement in the Cloud*, 21 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 403, 424 n.108 (2011).

261. Lyrissa Lidsky, *Public Forum 2.0*, 91 B.U. L. REV. 1975, 1981 (2011).

262. *See id.* at 1982–83.

263. 505 U.S. 672 (1992).

264. *Id.* 680–81.

265. *Id.* at 680 (citations omitted).

266. 460 U.S. 37, 45 (1983).

public forums as "property owned or controlled by the government" would remain an impediment.

Because of the nexus between traditional public forums and state action requirements, California's approach would not be suitable for a digital world.[267] Like the federal approach, it forecloses the First Amendment's application to third–party platforms and thus fails to protect "free discourse in the spaces where [it] actually occurs."[268] In other words, although California's state action theory is not blind to the value of free expression in privately owned spaces, it simply fails to make room for third–party platforms, which are indispensable to the public discourse in the present day.

For these reasons, neither the federal nor California state action theory is adoptable in its entirety. The next Section articulates a hybrid theory suitable for a digital world—a theory that "reconciles the increasing privatization of public forums with the rights of property owners."[269]

C. A THEORY SUITABLE FOR A DIGITAL WORLD

At this point in the Article, the state action doctrine has been disassembled and examined from a variety of angles, and it is time to reassemble the pieces and to devise a state action theory suitable for a digital world. Ironically, it requires a return to *Marsh*, decided in 1946 by the U.S. Supreme Court—fifty–eight years before Facebook was founded,[270] fifty–nine years before YouTube was founded,[271] and sixty years before Twitter was founded.[272] As discussed earlier, *Marsh* involved a company town with "all of the attributes of a state-created municipality" that exercised "semi-official municipal functions as a delegate of the State," and the U.S.

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267. The state constitution is amended regularly, so it would be possible to amend it to reduce or eliminate its focus on traditional public forums. *See* Jennie Drage Bowser, *Constitutions: Amend with Care*, NAT'L CONF. ST. LEGISLATURES (Sept. 1, 2015), www.ncsl.org/research/elections-and-campaigns/constitution-amend-with-care.aspx ("Citizens and lawmakers have been far more willing to make serious changes to state constitutions than to the federal one.").

268. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1313 (citing Hague v. Comm. for Indus. Org., 307 U.S. 496, 515 (1939)).

269. See *id.* at 1314.

270. *Our Mission*, FACEBOOK, https://newsroom.fb.com/company-info/ (last visited Sept. 17, 2017) (noting that Facebook was founded in 2004).

271. Melzer, *supra* note 260.

272. Owen Williams, *Twitter Has Lost More Than $2 Billion Since It Was Founded Twitter Milestones*, NEXT WEB (Feb. 29, 2016), https://thenextweb.com/twitter/2016/02/29/twitter-has-lost-more-than-2-billion-since-it-was-founded/ (noting that Twitter was founded in 2006).

Supreme Court ruled that Alabama violated the First and Fourteenth Amendments by forbidding a Jehovah's Witness from distributing religious materials in the town. The opinion balanced the autonomy rights of property owners against the expressive rights of property users, recognizing that users occupy a "preferred position" in American jurisprudence.[273]

In short, *Marsh* should be expanded and read functionally. It held that a company town and a public municipality were functional equivalents, such that the company town had to comply with First Amendment requirements.[274] The Court held that the town's property interests did not resolve the case, noting that "[t]he more an owner, for his advantage, opens up his property for use by the public in general, the more do his rights become circumscribed by the statutory and constitutional rights of those who use it."[275] Such a rule is suitable for the digital world because it recognizes that private property can take on public characteristics, and unlike the reasoning of *Hudgens* and *Morrison*, both written in formalist terms reflecting the *Civil Rights Cases*, *Marsh* does not make ownership dispositive. Rather, ownership is one factor in a case–by–case balancing of rights.

Further, *Marsh* is attractive because even though it permits comparisons of private and public spaces for state action purposes, unlike in *Pruneyard*, the comparisons are not tethered to traditional public forums. First, although the facts involved the distribution of literature on a sidewalk near a post office,[276] the U.S. Supreme Court has held that such spaces are not traditional public forums.[277] Second, although the case discusses generally the public character of spaces that are traditional public forums, it also discusses generally the public character of spaces that are *not* public forums, including turnpikes, ferries, and bridges.[278] Third, whereas the opinion discusses the private discharge of public functions and the public character of private property, it does not limit these concepts to spaces that would be the functional equivalent of traditional public forums.[279]

That said, it is necessary to broaden *Marsh's* scope—beyond the context of company towns—to allow courts to compare public and private spaces on a case–by–case basis. In other words, rather than comparing the attributes of a particular private space to the attributes of a town, as *Marsh*

273. Marsh v. Alabama, 326 U.S. 501, 509 (1946).
274. *Id.* at 507.
275. *Id.* at 506.
276. *Id.* at 503.
277. United States v. Kokinda, 497 U.S. 720, 721 (1990).
278. *Marsh*, 326 U.S. at 506.
279. *Id.* at 506–07.

did, a state action theory based on an expanded *Marsh* would allow courts to compare public and private spaces more generally to assess whether a private space is functionally public. In the free expression context, several considerations would guide that assessment: (1) the nature of the private property interests at issue, and (2) whether the space is operated for general use by the public for expressive purposes, or whether the operation is itself a public function, either of which would favor a finding of state action. That approach is protective of property interests and responsive to the realities of today's communications landscape—and it reflects the principle that the more a property owner opens up a space for public use, the more she must accommodate the rights of property users. It also accounts for values underlying the California and federal state action theories by considering private title (the federal emphasis) and public use (the California emphasis). Accounting for both puts the new approach between the formalism of *Hudgens* and the expansiveness of *Pruneyard* or *Fashion Valley*. Thus, it is not only functional, it is consistent with precedent recognizing the "need for careful balancing and . . . distinctions to ensure adequate protections for property rights."[280]

A functional *Marsh*–based state action theory for a digital world—where advances in technology so quickly outpace the law, and where the lines between the public and private spheres are collapsing—enables the state action doctrine to adapt to changing realities. This theory also ensures the primacy of fundamental rights and their relevance to the great problems of the day. Its basic adaptability empowers judges to take into consideration the particular and fast–changing attributes of the private online spaces that serve, as noted earlier, as the primary means of public communication for many people. And it allows judges to characterize a space as public for state action purposes, even if the space would not qualify as a traditional public forum. For those reasons, the theory ensures that as the public becomes more private, and the private becomes more public, the state action doctrine's contours will align with the contours of our fundamental rights.

IV. CONCLUSION

Answering Professor Black's call "to talk about [the state action doctrine] until we settle on a view both conceptually and functionally right,"[281] this Article examined the First Amendment's role in the private

280. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1314.
281. Black, *supra* note 1, at 70.

sector as "lawyers at Facebook and Google and Microsoft" exercise "more power over . . . free expression than any king or president or Supreme Court justice."[282] To that end, the Article analyzed the doctrine's traditions and values, its historical distinction between the public and private spheres, and the law of public forums—ultimately concluding that the state action doctrine, under its latest reformulation by the U.S. Supreme Court, forecloses the First Amendment's application to third–party platforms.

However, the Article went on to suggest a state action theory suitable for the digital world that could be devised through further judicial revision of the doctrine or a constitutional amendment. It recognizes that the modern challenge of applying the doctrine lies where the private and public spheres meet—and that a state action theory that ignores speech in private digital spaces is problematic in light of our nation's history of protecting speech in the spaces where it actually occurs.[283] The new theory uses *Marsh* as a foundation because it can be both expanded and read functionally to enable judges to balance the rights of property owners with those of property users, accounting for the dynamism of online spaces. Thus, the theory ensures that as the public becomes more private, and the private becomes more public, the state action doctrine's contours will remain aligned with those of our fundamental rights. And any uncertainty that might come from this more flexible and functional approach will surely, in time, resolve itself "as the common law system [begins] to adjudicate cases and the intrinsic limits of precedent [begin] to take hold."[284]

Professor Berman wrote in 2000 that "[d]ebates about the state action doctrine are arising again in the online context largely because we are facing the very real possibility that all of cyberspace will become an effectively private, Constitution-free zone."[285] That possibility has been realized to a great degree, and the state action doctrine continues to deserve our scholarly attention. Internet platforms, which increasingly have "a shared responsibility to help safeguard free expression,"[286] are developing a de facto free speech jurisprudence that underscores the importance of adopting a state action theory suitable for a digital world "where public title and public use overlap with less frequency."[287] Indeed, it shows that such a theory should recognize the value of free speech as a means to personal and

282. Gross & Rosen, *supra* note 19.
283. *See State Action and the Public/Private Distinction*, *supra* note 10, at 1313 (citing Hague v. Comm. for Indus. Org., 307 U.S. 496, 515 (1939)).
284. Berman, *supra* note 16, at 1308.
285. *Id.* at 1308.
286. Clinton, *supra* note 18.
287. *State Action and the Public/Private Distinction*, *supra* note 10, at 1312.

democratic development and, correspondingly, the role of third–party platforms in providing access to that speech.