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Bargaining for Innovation

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BARGAINING FOR INNOVATION

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ABSTRACT

Reward drives innovation. For this reason, Congress has enacted a system of patents, trademarks, and copyrights to incentivize innovation. Such publicly ordered intellectual property regulation supports public and private interests—mandating disclosure of the innovation while legislating protection of that disclosure. Increasingly, though, the legislated incentives are proving insufficient for innovation, and innovators are relying on private incentives, undermining the fundamental balance of our legal framework and maximizing the reward to innovators at the cost of the public's interest. Enforcement of contracts that supplant legislation rather than supplement it contravenes public policy and vitiates the public's interest. It is time to reform public ordering to protect the public's interest while providing sufficient reward to incentivize innovation.

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INTRODUCTION

INTELLECTUAL property laws incentivize innovation and grant innovators limited exclusivity in return for their contribution to the storehouse of public knowledge. That limited reward is not enough for all markets, however. Faced with pressure to increase returns on their investments in research and development, intellectual property owners are circumventing the legislative restrictions and enhancing their bottom line through contracts. Replacing legislated protection with private ordering vitiates the protections for public interest inherent in public ordering and reduces the dedication of innovations to the public while increasing the cost to the consumer.¹ Licenses protect those with market power and prioritize the innovator's interest over the public's interest.

Private ordering has become the dominant form of intellectual property protection in many areas—due, in no small part—to the poor fit of the modern technology and the aging intellectual property system. When licenses are used to supplement the public protections—promoting innovation in fields that provide insufficient public incentives—then such private ordering is in the public's interest. Contests, prizes, and competitions have their place in promoting innovation.² Private ordering cannot, how-

1. Private ordering is used in this article to describe the scenario where parties privately bargain for protection, through the use of contracts, industry norms, or other measures. Public ordering is used to refer to protection codified in legislation, such as the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

2. See, e.g., Jonathan Bays, Tony Goland, & Joe Newsum, *Using Prizes to Spur Innovation*, MCKINSEY & CO. (July 1, 2009), <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/using-prizes-to-spur-innovation#> [<https://perma.cc/D6DU-LXJX>] (“When are prizes more effective than other kinds of philanthropic instruments? Our research suggests that three conditions are paramount: a clear objective (for example, one that is measurable and achievable within a reasonable time frame), the availability of a relatively large population of potential problem solvers, and a willingness on the part of participants to bear some of the costs and risks. Teams competing for the \$10 million Ansari X PRIZE to develop spacecraft capable of entering space and returning safely twice within ten days, for instance, spent more than \$100 million in the pursuit.”); Tyler Cowen, *\$1 Million Plus in Emergent Ventures Prizes for Coronavirus Work*, MARGINAL REVOLUTION (Mar. 13, 2020, 9:00 AM), <https://marginalrevolution.com/marginalrevolution/2020/03/1-million-plus-in-emergent-ventures-prizes-for-coronavirus-work.html> [<https://perma.cc/5MM5-WXEY>] (“I believe that we should be using prizes to help innovate and combat the coronavirus. When are prizes better than grants? The case for prizes is stronger when you don't know who is likely to make the breakthrough, you value the final output more than the process, there is an urgency to solutions (talent development is too slow), success is relatively easy to define, and efforts and investments are likely to be undercompensated. All of these apply to the threat from the coronavirus.”); Daniel Hemel & Lisa Larrimore Ouellette, *Want a Coronavirus Vaccine, Fast? Here's a Solution*, TIME (Mar. 4, 2020, 8:00 AM), <https://time.com/5795013/coronavirus-vaccine-prize-challenge/> (“[T]he federal government can ensure that a vaccine would be cheap—or even free—while giving the private sector powerful incentives to pour resources into vaccine research . . . [by creating] a prize [that] will assure private-sector enterprises that they will be financially rewarded for a coronavirus

ever, be allowed to supplant public ordering. Congress and the courts have placed restrictions on legislative protections to enhance and protect the public's interest.³ Allowing intellectual property owners to undermine that interest in the quest for market control and profitability betrays the bargain set forth in the intellectual property system. Contracts are being used to extend the intellectual property laws in ways not envisioned by legislators at the time of enactment and to erode the boundaries of intellectual property protection. Congress and the courts need to closely examine private ordering to ensure that the protections established through contract are not those dedicated to the public. For instance, a patent gives a patentee a limited right to exclude others from making, using, selling, or offering for sale the patented innovation for a limited period.⁴ In return, the patentee agrees to enable its competitors to use the technology after the expiration of the patent term. Innovators are using the patent term to build up goodwill and brand recognition in technology, and then using licenses to exclude competitors from access to the patented technology after the patent terms expire, extending that goodwill and brand recognition far beyond the patent term.⁵ At the time that a patent is issued, the patentee is aware that competitors have the right to make, use, and sell the invention at the end of the patent term. When patentees contract around these explicit restrictions and prevent competitors from accessing the technology through a contract, such contracts should not be enforced. There is a fundamental shift occurring—away from public ordering and towards private ordering. It is time to reorder the intellectual property system as a whole.

The very demand of intellectual property owners for the circumvention of publicly ordered restrictions should raise questions in the eyes of the public. As a result, the public should consider whether—in light of the current methods of protection being used—Congress should reevaluate the current intellectual property system. In fields where technology protection is shifting from public ordering to private ordering, it seems clear that to better protect the public, Congress needs to reexamine its intellectual property legislation and the courts need to reexamine their interpretation of such legislation.

vaccine while also ensuring that individuals at all income levels will be able to afford immunization.”); Clive Thompson, *If You Liked This, You're Sure to Love That*, N.Y. TIMES MAG. (Nov. 21, 2008), <https://www.nytimes.com/2008/11/23/magazine/23Netflix-t.html> [<https://perma.cc/H8KW-H25D>] (“Netflix, the Web-based DVD-rental company, was holding a contest to try to improve Cinematch, its ‘recommendation engine.’ The prize: \$1 million.”).

3. One such example is the temporal limitation build into patent law, limiting its protection to a term of 20 years from the date on which the patent application was filed. 35 U.S.C. § 154 (a) (2) (2018). Trademark and copyright laws bear their own limitations.

4. *See id.* § 271.

5. *But see, e.g.,* Thomas & Betts Corp. v. Panduit Corp., 138 F.3d 277, 286 (7th Cir. 1998) (citing *Scott Paper Co. v. Marcalus Mfg. Co.*, 326 U.S. 249, 256 (1945)).

Software provides an excellent example of the difficulties in protecting emerging technology. Historically, software was difficult to protect and easy to copy.⁶ At first, neither the patent system nor the copyright system provided sufficient incentives for innovation, and programmers turned to licenses to protect their investment in research and development. Congress listened, as did the courts, and public protection expanded to cover software. Developers flocked to take advantage of this protection. As a direct result of that boom, Congress and the courts increased their interest in protecting software. That increase resulted in additional restrictions being placed on the patent protection available to software. In response to those restrictions, innovators returned to the era of relying on private ordering instead of public ordering to protect software—leading at least one commentator to note that the licenses to the trademarks protecting software brands may be more valuable than the software itself.⁷ There are many obstacles raised by today's patent system to a software innovator. At the United States Patent and Trademark Office (PTO), the innovator seeking to patent an intangible invention must prove that their innovation is not abstract. A suit for patent infringement on a method is held to a different standard than a suit for patent infringement on a system.⁸ At the United States International Trade Commission (ITC), the physical form of the technology matters. For example, e-readers holding data, but not the data the e-reader downloads, can be excluded from importation into the United States. The legislative restrictions need to be reexamined to determine that the intent of protecting the public interest is not defined by the strict limitations placed therein. Licenses protecting technology that crosses domestic boundaries supplement public ordering and do not necessarily undermine the public interest. When those licenses, however, are used to circumvent the restrictions enacted by Congress on domestic trade, then the public must ask if such licenses should be enforced.

The modern intellectual property market has shifted from a market focused on sales to a market focused on licenses, eroding the public interest in a way that we have yet to fully understand. Consider the example of the humble apple. Part of American folklore, legend, and dietary choices

6. See generally *Softman Prods. Co. v. Adobe Sys., Inc.*, 171 F. Supp. 2d 1075 (C.D. Cal. 2001); Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 TEX. L. REV. 961 (2005).

7. See HEATHER J. MEEKER, *THE OPEN SOURCE ALTERNATIVE: UNDERSTANDING RISK AND LEVERAGING OPPORTUNITIES* 114 (2008) (“The day may come when those who determine the official versions of large open source projects like Linux will control some of the most valuable pieces of intellectual property in the world: the name by which the project is known. While many in the open source world are poised for a patent fight, trademark fights may be far more complicated and destructive. Patents are a threat from outside the open source community. Trademark disputes are a lurking threat from within.”).

8. See generally Timothy R. Holbrook, *Method Patent Exceptionalism*, 102 IOWA L. REV. 1001 (2017).

for centuries, by the year 2000 the apple had devolved to a commodity identified simply by its color—be it red, green, or gold.⁹ Stepping into a grocery store today, the consumer is faced with a dazzling array of apple choices.¹⁰ Dozens of varieties and brands are for sale, including Pink Lady apples, First Kiss apples, Honeycrisp apples, and Cosmic Crisp apples.¹¹ Purchasing an apple today is a different consumer experience than the purchasing one in 2000. That experience is shaped not by changes in public ordering, but by private ordering, even though apples receive the benefit of protection under the utility patent system, the plant patent system, the Plant Variety Protection Act (PVPA), and trademark laws.¹² Developers are supplementing that set of rights with licenses designed to protect both the consumer and the developer. On the one hand, contracts allow developers to protect the apple itself, by placing restrictions on how the apple can be grown and distributed. On the other hand, however, developers are using licenses to control access to the apples and charge designer prices for designer apples. This fundamental shift in the way America's first fruit is sold would not have been possible without the paired protection of private and public ordering.

Changing public ordering is expensive, complicated, and, often, ineffective.¹³ The innate freedom to contract provides many opportunities for innovation in private ordering. In the best of both worlds, private ordering and innovation lead to changes in the intellectual property system, strengthen public ordering, and render private ordering unnecessary.¹⁴ That ideal, however, does not often occur, and when market demand subsumes public ordering, innovators seek protection by grafting private protection onto public protection. Such contracts must be closely examined to determine whether the restrictions envisioned by the courts and Con-

9. Tim Hensley, *A Curious Tale: The Apple in North America*, BROOKLYN BOTANIC GARDENS (June 2, 2005), https://www.bbg.org/gardening/article/the_apple_in_north_america [<https://perma.cc/LQU6-H6XW>] (“Grocery stores often stock only one red, one green, and one yellow variety, which usually means ‘Red Delicious,’ ‘Golden Delicious,’ and ‘Granny Smith.’”).

10. Paul J. Heald & Susannah Chapman, *Veggie Tales: Pernicious Myths About Patents, Innovation, and Crop Diversity in the Twentieth Century*, 2012 U. ILL. L. REV. 1051, 1102 (“Our data show varietal diversity actually increased during the twentieth century.”).

11. See ROWAN JACOBSEN, APPLES OF UNCOMMON CHARACTER: 123 HEIRLOOMS, MODERN CLASSICS, & LITTLE-KNOWN WONDERS 61 (2014) [hereinafter JACOBSEN, APPLES OF UNCOMMON CHARACTER]; Rowan Jacobsen, *Why Your Supermarket Only Sells 5 Kinds of Apples*, MOTHERJONES (Apr. 2013) [hereinafter Jacobsen, *Why Your Supermarket Only Sells 5 Kinds of Apples*], <https://www.motherjones.com/environment/2013/04/heritage-apples-john-bunker-maine> [<https://perma.cc/9M4S-8LMK>].

12. See generally Heald & Chapman, *supra* note 10.

13. See, e.g., Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part I of II*, 21 FED. CIR. B.J. 435 (2011); Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part II of II*, 21 FED. CIR. B.J. 539 (2012).

14. See, e.g., 35 U.S.C. § 271(f) (2018) (addressing and identifying loophole from Supreme Court's decision in *Deepsouth Packing v. Laitram Corp.*, 406 U.S. 518 (1972)).

gress in enacting and enforcing legislation are being supplanted or supplemented. When licenses circumvent those restrictions, such licenses violate public policy and should be found unenforceable.¹⁵

Answering the questions outlined in this Article will help the legislature determine where the market is broken and where a legislative fix needs to be sought before the public's interest is completely subsumed in light of the innovator's interest. To begin to understand where to focus the legislative correction, a few questions need to be asked. First, is there market demand? Second, is there publicly ordered protection designed to promote innovation in the field in question? Third, are innovators in that field using private ordering to promote innovation? Fourth, is the private ordering circumventing or augmenting the publicly ordered protection? Fifth, why did Congress codify the protection?

In his seminal work, *Imperfect Alternatives: Choosing Institutions in Law, Economics, and Public Policy*, Professor Komesar takes a deep dive into the question of institutional choice.¹⁶ Institutional choice plays a key role in papers written by Mark Lemley,¹⁷ Margaret Radin, Polk Wagner,¹⁸ and Paul Gugliuzza,¹⁹ among other distinguished intellectual property scholars. That being said, the question of what the relationship between institutional choice and intellectual property norms should be remains yet unanswered. Today, the shift from public to private ordering is well underway, if not already entrenched, and yet, there is little literature evaluating how to best protect the public interest in light of the imperfect alternatives provided by Congress, the courts, and the law of contract.

Innovation thrives through incentivization. Incentives arise from market demand, public ordering, and private ordering. Public ordering represents a bargain between the public and the innovator—granting the innovator rights while enforcing restrictions that favor the public. Licenses that circumvent legislative restrictions violate public policy and ought to be found unenforceable. Part I of this Article uses the apple to explore the evolution of intellectual property protection from an era where it was kept under lock and key to the modern-day grafting of public and private ordering. Part II addresses the incentives presented by private ordering, exploring its impact on the public's interest. The publicly ordered set of rights available to innovators within the United States is diverse, broad in scope, and protective of the public's interest. Licenses and

15. See generally Elizabeth Winston, *Why Sell What You Can License? Contracting Around Statutory Protection of Intellectual Property*, 14 GEO. MASON L. REV. 93 (2006).

16. See generally NEIL K. KOMESAR, *IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY* (1994).

17. Mark A. Lemley, *The Law and Economics of Internet Norms*, 73 CHI. KENT L. REV. 1257 (1998).

18. Margaret Jane Radin & R. Polk Wagner, *The Myth of Private Ordering: Rediscovering Legal Realism in Cyberspace*, 73 CHI. KENT L. REV. 1295 (1998).

19. Paul Gugliuzza, *Patent Litigation Reform: The Courts, Congress, and the Federal Rules of Civil Procedure*, 95 B.U. L. REV. 279 (2015).

non-disclosure agreements may supplement public ordering or supplant it. When private ordering extinguishes the carefully regulated restrictions placed on public ordering, enforcement of the privately ordered set of rights is not in the public interest. Part III calls for a careful reevaluation of the choice of institutions used to regulate public and private ordering, demanding a deeper look into how licenses need to be limited, clarity codified, and the rights of innovators and the public delineated.

The golden age of licensing is here. Bargaining for innovation is replacing lobbying for legislative protection. The concerns facing consumers, innovators, competitors, and the very intellectual property system itself are multifaceted, fundamental, and expansive. When Congress and the courts envision, enact, and enforce publicly ordering protections for intellectual property, those protections are limited in scope. Circumventing those restrictions through contract is unconscionable. It is time to take a closer look at licenses and innovation. When such licenses betray the bargain struck by Congress and the courts, private ordering should not be upheld. In fields where private ordering is the primary form of protection, public ordering needs to be closely examined to determine how to better protect the needs of the innovators and the public.

I. PROTECTING INTELLECTUAL PROPERTY

Consuming an apple in 1905 was a different experience than it is today. The *Nomenclature of the Apple: A Catalogue of Known Varieties Listed in American Publications from 1804-1904*, listed over 17,000 different apple names.²⁰ A century later, consumers purchased apples primarily by color—red, green, or gold.²¹ Today, consumers ask for apples by name—

20. W. H. RAGAN, NOMENCLATURE OF THE APPLE: A CATALOGUE OF KNOWN VARIETIES LISTED IN AMERICAN PUBLICATIONS FROM 1804–1904, in U.S. DEP'T OF AGRIC., BUREAU OF PLANT INDUSTRY BULLETIN No. 56 (1905). Heald & Chapman, *supra* note 10, at 1065 (suggesting that despite this large number, only between 280–420 apple varieties were actually commercially available in that time period).

21. JACOBSEN, APPLES OF UNCOMMON CHARACTER, *supra* note 11, at 61 (“Even in the 1990s, the typical American supermarket would have three apples: green Granny Smith, yellow Golden Delicious, and red Red Delicious. One for cooking, one for fresh eating, and one for staring at from afar.”); see Hensley, *supra* note 9 (“Grocery stores often stock only one red, one green, and one yellow variety, which usually means ‘Red Delicious’, ‘Golden Delicious’, and ‘Granny Smith.’”).

purchasing Fuji,²² Pink Lady,²³ Jazz,²⁴ and McIntosh²⁵ apples, among other types.²⁶ In 1905, apples came in all shapes, sizes, and colors.²⁷ By 2013, grocery stores dictated the exact size, coloration, and appearance of the apples.²⁸ Granny Smith found a chance seedling in her backyard in 1868, and she liked the apple so much that she began propagating it.²⁹ Every Granny Smith apple eaten today is the genetic clone of that chance seedling.³⁰ The modern apple is branded, managed, and carefully culti-

22. The Fuji apple was first developed in Japan in the 1930s. See Joseph Mercola, *Great Expectations: The Rise—and Fall—of the (Once) Red Delicious Apple*, MERCOLA (Feb. 20, 2016), <https://articles.mercola.com/sites/articles/archive/2016/02/20/red-delicious-apples.aspx> [<https://perma.cc/WC4Y-KR7C>]. It was a direct descendent of an apple grown by Thomas Jefferson in Virginia, who has been described as its grandfather. Hensley, *supra* note 9.

23. The Pink Lady was introduced to the market in 1989. JOAN MORGAN & ALISON RICHARDS, *THE NEW BOOK OF APPLES: THE DEFINITIVE GUIDE TO APPLES INCLUDING OVER 2,000 VARIETIES* 252 (2002).

24. The Jazz apple was introduced to the American market in 2017. See *NZ-Grown Jazz Apples Arrive in U.S. with New Branding*, FRESHFRUITPORTAL.COM (May 11, 2017), <https://www.freshfruitportal.com/news/2017/05/11/u-s-nz-grown-jazz-apples-arrive-u-s-new-branding/> [<https://perma.cc/GK9M-Z4UF>].

25. The McIntosh is an older apple, found in 1811, and commercially grown by the early 1900s. MORGAN & RICHARDS, *supra* note 23.

26. See Olivia Miltner, *New Wave Varieties Upset the Apple Cart*, OZY (Dec. 6, 2018), <https://www.ozzy.com/the-new-and-the-next/new-wave-varieties-upset-the-apple-cart/90620/> [<https://perma.cc/K9NQ-6R8C>] (“At the turn of the century, supermarkets globally had access to 150 apple varieties in all. Today, that number is 217, up 45 percent. In the last seven years, 25 new varieties have hit stores, 11 of them from the U.S. Once launched, these new apple brands take off quickly.”); Janet van Zoeren & Amaya Atucha, *The Rise of Apple Clubs and Trademark Varieties of Fruit*, WISCONTEXT (Nov. 3, 2016, 3:00 PM), <https://www.wiscontext.org/rise-apple-clubs-and-trademark-varieties-fruit> [<https://perma.cc/7EXT-2QPT>] (“Apples are one of the few produce items marketed by cultivar name—consumers will pay more for particular varieties that offer[] better taste, color and flavor.”).

27. See ANDREW MIKOLAJSKI, *THE COMPLETE WORLD ENCYCLOPEDIA OF APPLES: A COMPREHENSIVE IDENTIFICATION GUIDE TO OVER 400 VARIETIES ACCOMPANIED BY 90 SCRUMPTIOUS RECIPES* 15 (2017) (noting that today there are over 8,000 apple varieties, of which only 100 or so are commercially grown, while “ten varieties mak[e] up 90 percent of production”); Hensley, *supra* note 9 (“[I]n the 19th century, apples came in all shapes and guises, some with rough, sandpaper skin, others as misshapen as potatoes, and ranging from the size of a cherry to bigger than a grapefruit. Colors ran the entire spectrum with a wonderful impressionistic array of patterning—flushes, stripes, splashes, and dots.”).

28. See, e.g., Lindsey Smith, *This Isn’t Your Granny Smith’s Harvesting Technology*, NPR: THE SALT (Oct. 14, 2013, 2:36 PM), <https://www.npr.org/transcripts/232235993?storyId=232235993?storyId=232235993> [<https://perma.cc/7HLT-YAMD>].

29. See, e.g., Mick Telkamp, *Granny Smith Apples: A Brief History of the Iconic Fruit*, HGTV <https://www.hgtv.com/outdoors/flowers-and-plants/fruit/granny-smith-apples> [<https://perma.cc/UX75-P7KV>] (last visited Jan. 31, 2021) (explaining that the Granny Smith apples began as “a chance seedling discovered [in 1868] growing from a pile of discarded crab apples somewhere near Sydney, Australia”).

30. See, e.g., Mary Jane DuFord, *Granny Smith Apples: An All-Round Old Favourite Tart Baking Apple Variety*, HOME FOR HARVEST, <https://www.homefortheharvest.com/granny-smith-apples/> [<https://perma.cc/F23N-G94M>] (last visited Feb. 24,

vated. Technology in 1905 was not protected by the same vast network of private and public ordering that we see in 2020. The apple orchard is a continually evolving and incredibly profitable market driven by the partnership between public and private ordering.³¹ The changes in the apple consumed in 1905 and the apple acquired in 2020 provide a lens to view the changes through in public and private ordering.

Intellectual property owners enjoy a bountiful set of domestic rights. The system of rewards for innovation encompasses utility patents, plant patents, plant variety protection certificates, design patents, copyright registration, and trademarks, among other forms of publicly legislated protection. There is a substantial public interest in promoting disclosure of novel ideas and promulgating public ordering. Thus, public ordering allows for the promotion of innovation and the public interest at the same time within the apple market.

Tom Burford, renowned heirloom apple expert, famously described today's apple as a sad supermarket fruit, known to most Americans only by its appearance and ability to last in a tabletop fruit bowl.³² Such an apple, according to Burford, lacks the provenance and flavor of heritage varieties.³³ One apple, for instance—the Harrison—was popular in the nineteenth century and was long thought lost.³⁴ When the Harrison was rediscovered, it turned out to be a “superior cider variety” which helped revitalize the cider industry as a whole.³⁵ Its loss came about because of changes in apple consumers' demand.³⁶ Its modern success is driven in part by domestic interest in artisan cider making, the championship of

2021) (“Every Granny Smith apple today is grown on a tree where the wood has been grafted from the original tree in Australia (or more likely, the graft of a graft of a graft).”); Jacobsen, *Why Your Supermarket Only Sells 5 Kinds of Apples*, *supra* note 11 (“If you like the apples made by a particular tree, and you want to make more trees just like it, you have to clone it: Snip off a shoot from the original tree, graft it onto a living rootstock, and let it grow. This is how apple varieties come into existence. Every McIntosh is a graft of the original tree that John McIntosh discovered on his Ontario farm in 1811, or a graft of a graft. Every Granny Smith stems from the chance seedling spotted by Maria Ann Smith in her Australian compost pile in the mid-1800s.”).

31. See MIKOLAJSKI, *supra* note 27.

32. See Adrian Higgins, *Tom Burford, Champion of the Heirloom Apple, Dies at 84*, WASH. POST (Apr. 3, 2020, 9:16 PM), https://www.washingtonpost.com/local/obituaries/tom-burford-champion-of-the-heirloom-apple-dies-at-84/2020/04/03/99c7f116-75b2-11ea-87da-77a8136c1a6d_story.html [https://perma.cc/83MP-U4P6].

33. *Id.*

34. Fran McManus, *Lost & Found: The Search for the Harrison Apple*, EDIBLE JERSEY (Sept. 1, 2010), <https://ediblejersey.ediblecommunities.com/food-thought/lost-found-search-harrison-apple> [https://perma.cc/W5GW-NBK6].

35. Higgins, *supra* note 32.

36. McManus, *supra* note 34 (discussing the impact of urbanization, prohibition, and consumer taste on this once popular apple variety); Timothy Egan, “Perfect” Apple Pushed Growers Into Debt, N.Y. TIMES (Nov. 4, 2000), <https://www.nytimes.com/2000/11/04/us/perfect-apple-pushed-growers-into-debt.html> [https://perma.cc/VU5Q-2E56] (“The growers say they established color, size and

apple experts such as Tom Burford, and the Harrison's own distinctive flavor.³⁷ In 1992, "the apple crop's annual nationwide commercial value exceed[ed] \$1 billion" dollars.³⁸ By 2018, the domestic commercial value was over \$3.55 billion, the export value of apples is over \$1 billion dollars, and predictions had the domestic apple crop exceeding 256 million bushels.³⁹ Market demand has played a fundamental role in promoting agricultural innovation.⁴⁰ Modern apples have catchy names⁴¹ and reside in a landscape of trademarks, contracts, plant patents, international growing consortiums, and multimillion-dollar marketing campaigns.⁴² The apple orchard has proven to be an incubator for innovation at the intersection of public and private ordering.

A. *Physical Protection of Intellectual Property*

Marketing has long played an essential role in the image of the apple. Dating back to Johnny Appleseed, who is more marketing myth than practical apple purveyor, and moving forward to today, the apple is as American as its myths and legends.⁴³ In the late 1870s, an Iowan farmer planted

firmness standards in response to the major supermarket chains, who wanted a consistent product that caught the eye of the harried shopper.”).

37. *Id.*

38. Pat Bailey, *First Field Trial of Transgenic Apples Begins*, U.C. DAVIS (Apr. 15, 1992), <https://www.ucdavis.edu/news/first-field-trial-transgenic-apples-begins/> [<https://perma.cc/2RCT-BF5E>].

39. Ross Courtney, *2018 Apple Harvest by the Numbers: Industry Looks into Crystal Ball for 2018 Forecast Around the Globe*, GOOD FRUIT GROWER (Oct. 2, 2018), <https://www.goodfruit.com/harvest-by-the-numbers/> [<https://perma.cc/2CUL-9TPB>].

40. Dan Charles, *Want to Grow These Apples? You'll Have to Join the Club*, MINN. PUB. RADIO NEWS (Nov. 10, 2014, 10:11 PM), <https://www.mprnews.org/story/2014/11/10/npr-new-apples> [<https://perma.cc/97LD-3W7N>] (“There’s an apple renaissance underway, an ever-expanding array of colors and tastes in the apple section of supermarkets and farmers markets. Less visible is the economic machinery that’s helping to drive this revolution. An increasing number of these new apples are ‘club apples’—varieties that are not just patented, but also trademarked and controlled in such a way that only a select ‘club’ of farmers can sell them.”).

41. Amy Sowder, *What’s in a Name? A Lot, When It Comes to 2019 Apples*, PACKER (Jan. 11, 2019), <https://www.thepacker.com/markets/marketing-markets/shipping/whats-name-lot-when-it-comes-2019-apples> [permalink unavailable] (“The names of apples influence the consumer. They speak to each apple . . .”).

42. Brooke Jarvis, *The Launch*, CAL. SUNDAY MAG. (July 18, 2019), <https://story.californiasunday.com/cosmic-crisp-apple-launch> [<https://perma.cc/68GF-MK3S>].

43. Johnny Appleseed was, in fact, a real person, born in Massachusetts with the given name of John Chapman. However, the apples that Johnny Appleseed planted were not eating apples, but were, rather, apples used to make hard cider. See Dawn Mitchell, *The Truth About Johnny Appleseed and Hard Cider*, INDYSTAR, <https://www.indystar.com/story/news/history/retroindy/2018/10/25/truth-johnny-appleseed-and-hard-cider-indiana-history/1670562002/> [<https://perma.cc/FY5A-488Z>] (last updated Oct. 25, 2018, 4:03 PM). There is no mention of this in the seminal work establishing Johnny Appleseed’s legend—William D’Arcy Haley’s article, *Johnny Appleseed. A Pioneer Hero*—which was published in Harper’s Magazine in November of 1871. Instead, that article focuses on the fact

apple seedlings on his farm.⁴⁴ From those seedlings, a mutant apple tree grew that produced “the best tasting apple in the whole world.”⁴⁵ Known as the Hawkeye, this apple won a national taste test and was purchased by a Louisiana nursery that aggressively marketed it as the Red Delicious.⁴⁶ That mutant tree went on to produce the number one, best-selling apple in America for the next seventy years, comprising over 90% of the apple crop grown in the United States at one point.⁴⁷ When Clarence Stark purchased the original tree that produced the Golden Delicious apple in 1914, he sought to prevent theft of his property.⁴⁸ Stark surrounded the original apple tree with a locked and alarmed steel cage, to prevent any cuttings from being taken from the tree.⁴⁹

This physical protection was important because apples are genetic hybrids.⁵⁰ Apples have seeds, true, but if the seed of an apple is planted, the seed will not breed true, and the apples grown on the tree from that seed will bear no more than a “glancing resemblance to the original apple.”⁵¹ To reproduce a true copy of the desired apple, farmers use an asexual method of reproduction called grafting.⁵² Propagation through grafting involves taking a cutting from the parent apple tree and physically attaching that cutting to existing rootstock.⁵³ The buds on the “sticks” cut from the original tree each have the potential of propagating the desired apple,

that Johnny Appleseed’s whole life was “devoted to the work of planting apple seeds in remote places.” William D’Arcy Haley, *Johnny Appleseed. A Pioneer Hero*, HARPER’S MAG. (Nov. 1871), <https://harpers.org/archive/1871/11/johnny-appleseed-a-pioneer-hero/> [<https://perma.cc/3GTY-UZYF>].

44. Mercola, *supra* note 22.

45. *Id.*

46. *Id.*; Sarah Yager, *The Awful Reign of the Red Delicious: How the Worst Apple Took Over the United States, and Continues to Spread*, ATLANTIC (Sept. 10, 2014), <https://www.theatlantic.com/health/archive/2014/09/the-evil-reign-of-the-red-delicious/379892/> [<https://perma.cc/7HUR-V9SW>].

47. Jeanette Hurt, *This Is Why Red Delicious Apples Suck So Hard*, HUFFINGTON POST (Aug. 22, 2018, 5:46 AM), https://www.huffpost.com/entry/red-delicious-apples-suck_n_5b630199e4b0b15abaa061af [<https://perma.cc/Z2N5-KPEE>]; Sanam Yar, *Your Fall Apple Options May Look a Little Different This Year*, BUSTLE (Sept. 4, 2018), <https://www.bustle.com/p/red-delicious-apples-are-no-longer-americas-top-produced-apple-just-in-time-for-fall-11492564> [<https://perma.cc/2V59-APZP>].

48. Daniel Neman, *Stark Bro’s Bicentennial—Red and Golden Delicious Apple Pioneers*, ST. LOUIS POST-DISPATCH (Mar. 29, 2016), https://www.stltoday.com/lifestyles/food-and-cooking/stark-bro-s-bicentennial-red-and-golden-delicious-apple-pioneers/article_242875b0-a137-5492-b5c0-4d567bc02df8.html [<https://perma.cc/Q7LR-JS24>].

49. *Id.*

50. MICHAEL POLLAN, *THE BOTANY OF DESIRE: A PLANT’S-EYE VIEW OF THE WORLD* 10 (2001).

51. *Id.*

52. *See, e.g.*, *Delano Farms Co. v. Cal. Table Grape Comm’n*, No. 1:07-CV-01610-SEH, 2013 WL 5146910, at *3 (E.D. Cal. Sept. 12, 2013) (discussing grafting in the context of growing grapes), *aff’d*, 778 F.3d 1243 (Fed. Cir. 2015).

53. *Id.*

which will be the genetic twin of the parent apple.⁵⁴ Clarence Stark's physical protection of the apple tree, in an era when plants had no intellectual property protection, allowed him to control access to the cuttings from the tree, thus preventing others from making genetically identical copies of his "Golden Delicious" apple.⁵⁵ He was, in essence, using private ordering to protect his intellectual property.

Apple innovation's physical aspects has centralized apple research today. In the United States, the University of Minnesota, Cornell University, and Washington State University develop the vast majority of new apple varieties.⁵⁶ Developing a new apple variety is a time-consuming process—taking over a decade, at a minimum, to move from the idea stage to the consumer's diet.⁵⁷ The idea must be promulgated, the apple trees must be hand-pollinated to develop the perfect cross, the best regions to grow the apple must be researched, and finally, the name and method of distribution and control must be determined.⁵⁸ Market demand has incentivized an aggressive and effective protection scheme combining private ordering, public ordering, and physical control. One cannot take an apple tree to the local shop and make a simple and straightforward copy of the intellectual property embodied therein. That inherent physical protection allows growers to protect their market effectively through private ordering. Such protection is inherently limited, however, by the remedies available for breach of that protection.

B. *Plant Patent Act*

In 1930, Congress enacted the first public law protecting agricultural innovation in the United States. The Plant Patent Act (PPA) granted protection to new asexually reproducing plants, which cannot self-replicate.⁵⁹ The PPA grants patentees the right to exclude others from asexually reproducing, using, offering for sale, selling, or importing the patented plant within the United States.⁶⁰ This right, however, is granted to a narrow range of plants, and the plants covered are the very plants least in need of legal protection because they are protected by their own asexually

54. *See id.*

55. Clarence Stark could not prevent a competitor from coming up with the identical genetic version of the Golden Delicious by creating the exact same cross-pollination—but it would be highly unlikely that a competitor could do so—even today.

56. *See* Alex Abad-Santos, *Honeycrisp Was Just the Beginning: Inside the Quest to Create the Perfect Apple*, Vox, <https://www.vox.com/culture/2016/10/6/13078268/honeycrisp-apple-explainer-club-apples> [permalink unavailable] (last updated Sept. 11, 2017, 10:23 AM).

57. *Id.*

58. *Id.*

59. For more on the historical reasons for this distinction, see *J.E.M. Ag Supply Inc. v Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 132 (2001).

60. 35 U.S.C. § 163 (2018).

reproducing nature—in other words, they do not self-replicate.⁶¹ Plant patents protect the plant, and not its seeds, fruit, or cellular material.⁶² A plant patent is limited to one variety and its asexual progeny, and does not cover a mutant or a sport.⁶³ The nature of asexual reproduction is such that the purchase of a single asexually reproduced plant can result in many years of crops.⁶⁴ Authorized purchasers of asexually reproduced plants, under the PPA, have the right to develop new and distinct varieties through cross-pollination, for instance, as long as the purchaser does not clone the purchased plant in violation of the PPA.⁶⁵ Those new varieties may be patented as well if they meet the PPA requirements.⁶⁶ In other words, PPA protection is quite narrow.

However, as narrow as such protection is, that publicly ordered protection remains valuable—balancing out the public interest with the rights given to the innovator.⁶⁷ As discussed, apple trees do not breed true, and a farmer who plants an apple orchard with seeds from a particular apple variety would not grow trees producing that variety.⁶⁸ The farmer would instead end up with trees reflecting the genetic diversity of all modern apple varieties.⁶⁹ This diversity is reflected in the fact that many plant patents have been granted to apple varieties.⁷⁰

61. In 2018, there were 595,683 utility patent applications filed at the PTO, and only 1,058 plant patent applications. U.S. PATENT & TRADEMARK OFFICE, PERFORMANCE AND ACCOUNTABILITY REPORT 178 tbl.1 (2018), <https://www.uspto.gov/sites/default/files/documents/USPTOFY18PAR.pdf> [<https://perma.cc/92UK-3KH2>].

62. *See, e.g., In re Arzberger*, 112 F.2d 834 (C.C.P.A. 1940).

63. *See, e.g., Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1568 (Fed. Cir. 1995) (discussing the difference between plant variety as used in the PVPA and the PPA and holding that “the scope of a plant patent is the asexual progeny of the patented plant variety”).

64. Carla R. D. Bourne, *Will § 101 Patents Have Utility for Plants?*, 3 SAN JOAQUIN AGRIC. L. REV. 155, 159 (1993) (“Crops produced by asexually reproduced plants (for example apples, grapes, and oranges) generate crops for many years as opposed to crops from sexually reproduced plants (for example wheat, soybeans, and rice) which require new seed for each crop.”); TOM BURFORD, APPLES OF NORTH AMERICA: 192 EXCEPTIONAL VARIETIES FOR GARDENERS, GROWERS, AND COOKS 218 (2013) (“[A]pple trees will often fruit for fifty years or more.”).

65. 35 U.S.C. § 163 (“In the case of a plant patent, the grant shall include the right to exclude others from asexually reproducing the plant.”).

66. *See, e.g., Imazio Nursery*, 69 F.3d at 1565 (“[A] patentable variety could be either a sport, mutant, or hybrid.”).

67. *See* Heald & Chapman, *supra* note 10, at 1079 (“As of 2009, 372 apple varieties have been subject to patents.”).

68. Apples are heterozygous. Every apple seed will produce a different apple than the apple that grew the seed in the first place. *See* POLLAN, *supra* note 50, at 10.

69. *Id.*

70. *See, e.g., Apple*, U.S. Plant Patent No. 61 (issued Apr. 18, 1933) (“What is claimed is: An apple substantially as herein shown and described . . .”).

On March 20, 1990, the University of Minnesota received Plant Patent 7197 for the Honeycrisp variety apple tree.⁷¹ The plant patent on the Honeycrisp and its foreign sales rights has “earned the University of Minnesota more than ten million dollars in royalties, making it the third-most-valuable invention ever produced there.”⁷² Known derisively as the “Moneycrisp” apple, the variety has grown in its success, market demand has kept up with the higher prices, and despite its higher costs, the Honeycrisp apple is one of the most popular apple varieties sold in the United States.⁷³ Its success came about, in part, because of the robust, publicly ordered protections available for plants. Gala apples, first patented in 1974, have a distinctive, mottled skin color, leading to a high propensity to produce sports with different skin color mutations.⁷⁴ As a result, over twenty sports of Gala apples have been cultivated and patented.⁷⁵ Each of these sports can be reproduced without a license from the owner of the plant patent on the original Gala apple.⁷⁶ Despite these limitations, plant patents remain a valuable source of public ordering for the promotion of disclosure and innovation.⁷⁷ The first plant patent was

71. Apple Tree: Honeycrisp, U.S. Plant Patent No. 7197 (issued Mar. 20, 1990).

72. John Seabrook, *Crunch: Building a Better Apple*, NEW YORKER (Nov. 14, 2011), <https://www.newyorker.com/magazine/2011/11/21/crunch> [<https://perma.cc/NHA7-LF6Y>].

73. Claudine Ko, *Is the Honeycrisp Apple Engineered to Fail?*, WIRED, <https://www.wired.com/brandlab/2016/05/is-the-honeycrisp-apple-engineered-to-fail/> [<https://perma.cc/KMH2-KU6B>] (last visited Jan. 31, 2021) (“The Honeycrisp is now the most planted variety in Washington State, the country’s biggest apple producer.”).

74. See Apple Tree, U.S. Plant Patent No. 3,637 (issued Oct. 15, 1974).

75. *Sport of Gala Patents (Class PLT/162)*, JUSTIA: PATENTS, <https://patents.justia.com/patents-by-us-classification/PLT/162?page=2> [<https://perma.cc/2G2V-RX4K>] (last visited Dec. 15, 2020).

76. Bourne, *supra* note 64.

77. See OFFICE OF TECH. ASSESSMENT, OTA-BA-370, NEW DEVELOPMENTS IN BIOTECHNOLOGY: PATENTING LIFE—SPECIAL REPORT, CHAPTER 5: INTELLECTUAL PROPERTY AND PLANTS 69–90 (Apr. 1989) (noting that the Plant Patent Act “was designed to encourage new variety development and to afford agriculture the benefits of the patent system”); John King & Paul Heisey, *Ag Biotech Patents: Who Is Doing What?*, AMBER WAVES MAG. (Nov. 1, 2003), <https://www.ers.usda.gov/amber-waves/2003/november/ag-biotech-patents-who-is-doing-what/> [<https://perma.cc/ZN9L-V3BV>] (“The upward trend in ag biotech patents has outpaced the overall upward trend in patenting throughout the U.S. economy. This trend reflects increased research and development, changing legal doctrine on what can be patented, and different strategic uses of intellectual property protection.”).

issued in 1931,⁷⁸ and today, over 30,000 plant patents have been issued.⁷⁹ Litigation over plant patent infringement is rare.⁸⁰

C. *Plant Variety Protection Act*

Horticulturists pushed for additional protection for sexually reproducing plants.⁸¹ Such plants are much more difficult to protect because a primary purpose of the plant is to genetically reproduce itself. As a result, in 1970 Congress passed the Plant Variety Protection Act (PVPA), granting limited protection for plant varieties through the issuance of Certificates of Protection (PVP certificates).⁸² The 2018 Farm Bill expanded the protection of the PVPA to asexually reproducing plants.⁸³ A PVP certificate allows its holder the exclusive right to market the specific, novel, distinct, uniform, and stable seed variety for a period of time.⁸⁴ On average, 480 applications for PVP certificates are filed annually, with an average issuance time of eighteen months.⁸⁵

To introduce innovation into the seed market, a seed firm must first develop parent seed lines⁸⁶ that are the core of the company.⁸⁷ Seed

78. See *Climbing or Trailing Rose*, U.S. Plant Patent No. 1 (issued Aug. 18, 1931).

79. See *Table of Issue Years and Patent Numbers, for Selected Document Types Issued Since 1836*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/web/offices/ac/ido/oeip/taf/issuyear.htm> [<https://perma.cc/7N87-G6CE>] (last modified Feb. 12, 2021, 7:34 AM).

80. See, e.g., Robert J. Jondle, *U.S. Plant Patents and the Imazio Decision*, JONDLE & ASSOCIATES P.C., https://ipmall.law.unh.edu/sites/default/files/hosted_resources/PLANT_PATENT_ARTICLES/Robert_Jondle_-_US_Plant_Patents_and_the_Imazio_Decision.pdf [<https://perma.cc/8VJK-7E6Z>] (last visited Dec. 16, 2020) (relying on a survey of U.S. flower companies, Mr. Jondle found that plant patents are “well respected” and that “[h]aving a Plant Patent increases the royalty paid by licensee” as much as five or ten times and that litigation is rare simply because the system “is working well”).

81. See Cary Fowler, *The Plant Patent Act of 1930: A Sociological History of its Creation*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 621, 630–31 (2000).

82. The Plant Variety Protection Office (PVPO), which administers the PVPA, has examined over 180 species of plants, resulting in the issuance of almost 14,000 PVP certificates. Plant Variety Protection Board, *Plant Variety Protection Board Meeting Minutes Chicago, Illinois—April 24—26, 2019*, U.S. DEP'T AGRIC. PLANT VARIETY PROTECTION OFF., https://www.ams.usda.gov/sites/default/files/media/PVPO_April2019BoardMeetingMinutes.pdf [<https://perma.cc/VXZ9-37FQ>] (last visited Jan. 31, 2021).

83. Agriculture Improvement Act of 2018 (Farm Bill), Pub. L. No. 115-334, 132 Stat. 4490 (2018).

84. 7 U.S.C. §§ 2402, 2483 (2018).

85. U.S. DEP'T AGRIC. PLANT VARIETY PROTECTION OFF., *supra* note 82.

86. See Mark D. Janis, *Supplemental Forms of Intellectual Property Protection for Plants*, 6 MINN. J.L. SCI. & TECH. 305, 305 (2004) (“Trade secret protection has long been used in the seed industry.”); *id.* at 308 (“[One example of] trade secret protection that is considered to be typical in the seed industry: trade secrets in the identity and genetics of the inbred parents of a commercially-distributed hybrid.”).

87. JORGE FERNANDEZ-CORNEJO, U.S. DEP'T AGRIC., INFO. BULLETIN NO. 786, THE SEED INDUSTRY IN U.S. AGRICULTURE: AN EXPLORATION OF DATA AND INFORMA-

firms often have several seed lines that are heavily protected through public and private ordering.⁸⁸ Farmers growing seed historically saved seed to regrow the following year.⁸⁹ The PVPA codified this practice and specifically exempted saved seed from the protections issued to the holder of a PVP certificate.⁹⁰ The saved-seed exception allows a farmer to purchase seed once, reproduce the seed, save that seed, and use that saved seed to replant the farmer's fields.⁹¹ To circumvent this exception and reclaim potentially lost profit, seed companies focused their energy on developing seed that could not be saved—such as hybrid corn.⁹² This saved seed ex-

TION ON CROP SEED MARKETS, REGULATION, INDUSTRY STRUCTURE, AND RESEARCH AND DEVELOPMENT 28 (Jan. 2004) (“Plant breeding constitutes the foundation of the modern seed industry in that it creates a unique and marketable product through the application of science. Plant breeders develop seeds embodying such improvements as high yields, resistance to disease and pests, or traits specific to regional agroclimatic conditions. A seed’s success in the market depends primarily on its improved traits, which embody the R&D effort.”), https://www.ers.usda.gov/webdocs/publications/42517/13616_aib786_1_.pdf?v=9374.1 [<https://perma.cc/PE7P-VRCW>].

88. Michael T. Roberts, *National Aglaw Center Research Article*, J.E.M. Ag. Supply, Inc. v. Pioneer Hi-Bred International, Inc.: *Its Meaning and Significance for the Agricultural Community*, 28 S. ILL. U. L.J. 91, 126 (2003) (“Until . . . the [US]PTO reversed its stance on the issuance of utility patents for sexually reproducing plants, seed companies typically employed trade secrets to protect the parental line. Trade secret protection still serves as a valuable tool in protecting the interest of seed producers.”); *see also* FERNANDEZ-CORNEJO, *supra* note 87, at 28 (“The high costs associated with large-scale R&D limit it to a relatively small number of large companies and to Federal Government agencies and land-grant colleges and universities. High R&D costs require private sector varieties to be commercially viable, highly competitive, and well protected by intellectual property rights (IPR).”).

89. *See* *Asgrow Seed Co. v. Winterboer*, 989 F.2d 478, 480 (Fed. Cir. 1993) (Newman, C.J., dissenting from denial of rehearing en banc) (“The farmer’s exemption permits farmers to continue their usual practice of saving part of their crop as seed for replanting on their farms”); *Asgrow Seed Co. v. Winterboer*, 795 F. Supp. 915, 918 (N.D. Iowa 1991) (stating “Congress specifically protected the historical and traditional right of small farmers like the Winterboers to make seed sales to fellow farmers,” and noting the seed sold was saved seed), *rev’d*, 982 F.2d 486 (Fed. Cir. 1992), *rev’d*, 513 U.S. 179 (1995); *Seedsaving and Seedsavers’ Resources*, FRIENDS OF THE GARDEN, <http://homepage.tinet.ie/~merlyn/seedsaving.html> [<https://perma.cc/JQ5D-ZUCP>] (last visited Feb. 24, 2021).

90. *See* 7 U.S.C. §§ 2543–2544 (2018).

91. *See id.* § 2543; *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 192 (1995).

92. JACK RALPH KLOPPENBURG, JR., *FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY* 11 (Daniel Lee Kleinman & Jo Handelsman eds., 2005) (“[P]lant breeders have long pursued hybrids less for their superior agronomic characteristics than for the ‘biological patent’ that they confer. Given the key role that cytoplasmic male sterility had played in the production of hybrids, researchers were, by the early 1980s, already looking to use biotechnology for the induction of sterility in specified generations of seed patents. As understanding of gene structure and operation advanced during the 1990s, both corporate and public labs explored the ways various functions of a plant—including its fertility—could be switched on and off by application of various chemicals.”); *see also* FERNANDEZ-CORNEJO, *supra* note 87, at vi (“Hybrid corn varieties developed in the first half of the 20th century and, widely accepted by farmers, provided the private sector a natural method of protecting plant breeding investments—saved hybrid corn seed

ception is one of the most litigated aspects of the protection offered by the PVPA.⁹³

PVPA protection is routinely sought for novel varieties of seed. It is inexpensive to obtain and (unfortunately) also very limited in its scope of protection. Not a single PVP certificate has ever been held invalid by the court system.⁹⁴ That being said, PVP certificates provide significant protection for the public interest, promote mandatory disclosure, and contain various research exceptions. The exceptions are largely contracted around, however, and the value of the PVP certificate may be more in name than the number of PVPA applications might otherwise indicate.⁹⁵

D. *Utility Patent Protection*

It was not until 1986 that the first utility patent was granted to a plant.⁹⁶ Fifteen years later, in 2001, the Supreme Court ruled in *J.E.M. Ag Supply Inc. v Pioneer Hi-Bred International, Inc.*⁹⁷ that seed was eligible for both utility and plant patents.⁹⁸ As strong as utility patent protection for plant varieties seems, however, there are major limitations on the scope of utility patents. Natural phenomena, for instance, are not patent-eligible subject matter.⁹⁹

The seed at issue in *J.E.M.* was a non-genetically modified, hybrid corn seed.¹⁰⁰ Hybrid seed is the product of cross-fertilization of two parent varieties.¹⁰¹ The seed was the result of extensive research and careful

produces substantially lower yields, encouraging farmers to repurchase seed every year.”).

93. See generally Jim Chen, *The Parable of the Seeds: Interpreting the Plant Variety Protection Act in Furtherance of Innovation Policy*, 81 NOTRE DAME L. REV. 105, 111 (2005).

94. See, e.g., *Arizona Grain Inc. v. Barkley Ag Enterprises LLC*, No. CV-18-03371-PHX-GMS, 2019 WL 5801968, at *1 (D. Ariz. Nov. 7, 2019) (“At all times relevant herein, the PVP Certificate for SY 158T was and remains in full force and effect.”).

95. See, e.g., *Monsanto v. Scruggs*, 459 F.3d 1328, 1333 (Fed. Cir. 2006) (explaining Monsanto licenses seed to seed sellers with “certain restrictions on seed sellers, including that seed companies may not sell seed containing Monsanto’s technology to growers unless the grower signs one of Monsanto’s license agreements; and that seed so sold may be used by growers to grow only a single commercial crop”).

96. Claim 1 of U.S. Patent No. 4,581,847 (issued April 15, 1986) reads, “A maize seed having an endogenous free tryptophan content of at least about one-tenth milligram per gram dry seed weight and capable of germinating into a plant capable of producing seed having an endogenous free tryptophan content of at least about one-tenth milligram per grain dry seed weight.” The ’847 patent was the subject of *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (B.P.A.I. Sept. 24, 1985).

97. 534 U.S. 124 (2001).

98. *Id.* at 145.

99. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70–71 (2012).

100. See *J.E.M.*, 534 U.S. at 127–28.

101. *Id.*

cross-breeding, but it could, in theory, have been discovered in nature.¹⁰² When replanted, a hybrid seed will not breed true.¹⁰³ As a result, if a farmer wishes to grow a hybrid variety, that farmer must have access to new hybrid seed each year.¹⁰⁴ If the seed is a protected variety, then the farmer must purchase the seed from a licensed source. Now, if instead of doing this, suppose that the same farmer planted in a field the two parent varieties that, when crossed, create a patent-eligible seed corn variety. Under natural conditions, some pollen will be windborne from each variety to fertilize the other variety.¹⁰⁵ The farmer may, thus, find infringing corn seed in the field.¹⁰⁶ Should the patentee recover damages from the farmer for the farmer's failure to interfere with nature? Remarkably, there is no discussion of this question in *J.E.M.* and no other relevant case law.¹⁰⁷ To prove infringement of a plant patent, access to the patented

102. Hybrid seed corn is created when two species of corn are mated together by fertilizing the flower of one species with the pollen of another species. *Genetically Modified Foods*, PBS, <http://archive.pov.org/hybrid/genetically-modified-foods/> [<https://perma.cc/CY6M-RFQU>] (last visited Jan. 31, 2021). The USDA reports the following:

The production of hybrid seed requires careful control of the parents. During the experimental phases of developing inbred lines and hybrids, this control is accomplished by covering the ear shoots and tassels with bags and transferring pollen of the desired type by hand. In commercial seed production, control is achieved by the isolation of the seed fields and by the removal of tassels, before shedding of the pollen begins, from the rows to be used as female parents.

Agricultural Research Timeline: Improving Corn, U.S. DEP'T AGRIC., <http://www.ars.usda.gov/is/timeline/corn.htm> [<https://perma.cc/J74A-QBZW>] (last updated Feb. 14, 2018). This is the only way to achieve uniformity in the variety.

103. *Id.*

104. *Id.*

105. Cross-pollination can occur through the transfer of windborne pollen from one species to another. Tripti Vashisth, *Pollination Techniques*, PLANT BREEDING 21ST CENTURY, http://plantbreeding.coe.uga.edu/index.php?title=19._Pollination_Techniques [<https://perma.cc/TR2N-RRBX>] (last modified Aug. 9, 2013); see also *Organic Seed Growers & Trade Ass'n v. Monsanto Co.*, 718 F.3d 1350, 1357 (Fed. Cir. 2013) (“[T]he district court held that it is likely inevitable that conventional crops will be contaminated by trace amounts of windblown pollen or seeds from genetically modified crops or other sources.”).

106. As the written description of the patent at question in *J.E.M.* makes clear:

The development of a hybrid corn variety involves three steps: (1) the selection of superior plants from various germplasm pools; (2) the selfing of the superior plants for several generations to produce a series of inbred lines, which although different from each other, each breed true and are highly uniform; and (3) crossing the selected inbred lines with unrelated inbred lines to produce the hybrid progeny.

U.S. Patent No. 5,491,295 (issued Feb. 13, 1996). Each of these steps can, and do, occur naturally. The discovery is a way of ensuring reproducibility of a variety, while the patent claims the variety itself.

107. Furthermore, if the seed corn is naturally occurring, then the patent must fail the test of novelty under 35 U.S.C. § 102 (2018).

plant itself must be proven—but there is no similar limitation, nor should there be, for infringement of a utility patent.¹⁰⁸

Furthermore, an innovation must be markedly different from any found in nature to be patent-eligible.¹⁰⁹ One small enterprise, the Lost Apple Project (the Project), roams the Pacific Northwest looking for lost apple varieties.¹¹⁰ The Project collects apples from forgotten and abandoned orchards and ships the apples to botanists for identification.¹¹¹ If the Project finds a “lost” variety, it grafts a wood cutting from the tree onto new rootstock and propagates the variety.¹¹² Through this process, the Project has rediscovered twenty-three varieties, helping increase diversity through heirloom varieties.¹¹³ These varieties are not eligible for utility patent protection.¹¹⁴

Even if an innovator succeeds in obtaining a utility patent, the next issue is the limited scope of rights associated with patent protection. A plant may grow for hundreds of years, reproduce for even longer, and take many years to become commercially viable. The lifespan of the commercially viable plant and the enforcement period of a patent is a poor fit.¹¹⁵ An apple tree, for instance, will often bear fruit for fifty years or more—while under current law, a patent expires twenty years from the date it was filed.¹¹⁶

Further, patent protection extends only as far as the first sale of the patented chattel. After that sale, the innovator’s rights in the chattel are exhausted, and the patentee no longer has any right to control subsequent

108. *See* Imazio Nursery, Inc. v. Dania Greenhouses, 69 F.3d 1560, 1569–70 (Fed. Cir. 1995).

109. *Diamond v. Chakrabarty*, 447 U.S. 303, 310 (1980).

110. Gillian Flaccus, *10 Pioneer-Era Apple Types Thought Extinct Found in US West*, PHYS.ORG (Apr. 15, 2020), <https://phys.org/news/2020-04-pioneer-era-apple-thought-extinct-west.html> [<https://perma.cc/3ZJL-3ZJ4>].

111. *Id.*

112. *Id.*

113. *Id.*; *see also* Gillian Flaccus, *Apple Sleuths Hunt Northwest for Varieties Believed Extinct*, STATESMAN J. (Nov. 22, 2019, 6:00 AM), <https://www.statesmanjournal.com/story/news/2019/11/22/apple-tree-hunt-agriculture-fruit-nature-nonprofit-vietnam-veteran/4248380002/> [<https://perma.cc/CKV7-C665>] (“The task is huge. North America once had 17,000 named varieties of domesticated apples, but only about 4,000 remain. The Lost Apple Project believes settlers planted a few hundred varieties in their corner of the Pacific Northwest alone.”).

114. *See generally* *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576 (2013).

115. An apple tree can live for over 100 years, far beyond the duration of a patent, while taking many years to be profitable and fruitful. This is one example of a poor fit between public ordering and innovation. Michael Tortorello, *An Apple a Day, for 47 Years*, N.Y. TIMES (Oct. 22, 2014), <https://www.nytimes.com/2014/10/23/garden/apple-picking-season-is-here-dont-you-want-more-than-a-macintosh.html> [<https://perma.cc/RMQ5-BZ3Z>] (“An apple tree . . . can live 100 to 150 years on an old-fashioned rootstock. A 300-year-old tree is not an impossibility.”).

116. BURFORD, *supra* note 64, at 218 (“[A]pple trees will often fruit for fifty years or more.”); *see also* 35 U.S.C. § 154(a)(2) (2018) (providing timeline for when patent expires).

sales of the chattel.¹¹⁷ In other words, if the University of Minnesota sells scionwood or other propagation materials from the Honeycrisp apple cultivar, then any subsequent purchaser can propagate the cultivar. The university no longer can control the conditions under which a purchaser propagates the apple or sells the scionwood. These limitations are there to protect the public's interest and promote competition, but they can have a devastating impact on the value of the technology.¹¹⁸ Patent coverage for agrobiotechnology is of crucial importance, but it has significant limitations.

E. *Trademark Protection*

Since the days of Clarence Stark and the discovery of the Red Delicious, apple growers have sought to disrupt the apple cart.¹¹⁹ In the intervening years, legislative protection has expanded. The incentives behind innovation have become more formalized across many technologies, and interest in branding the product has increased among innovators seeking to protect market share. Trademarks can provide incentives for innovation that differ from other types of intellectual property protection. At least one expert has stated that in the software industry—another area of technology where the traditional system of protection is a poor fit—the next big battlefield will be over the brands and trademarks, not the patents and code.¹²⁰ This same fight is brewing in the apple orchard as well. Apples are one of the most profitable items sold in grocery stores.¹²¹ Trademarks last as long as the mark is source-identifying and used in commerce.¹²² As a result, innovators in the plant field are branding their plants and using private ordering to graft together trademark protection, patent protection, and other restrictions.

The Project, discussed above, provides valuable insight into how private ordering can supplement public ordering. Such lost apples are brandable but not patentable. If the brand is what a consumer wants, then it does not matter whether public ordering protects the cultivar or not. A newly rediscovered variety can prove just as profitable as a newly patented

117. See *Quanta Comput., Inc. v. LG Elecs., Inc.*, 553 U.S. 617, 621 (2008).

118. See, e.g., Jeremy Sheff, *Self-Replicating Technologies*, 16 STAN. TECH. L. REV. 229 (2013).

119. See Mercola, *supra* note 22.

120. MEEKER, *supra* note 7, at 114 (“The day may come when those who determine the official versions of large open source projects like Linux will control some of the most valuable pieces of intellectual property in the world: the name by which the project is known. While many in the open source world are poised for a patent fight, trademark fights may be far more complicated and destructive. Patents are a threat from outside the open source community. Trademark disputes are a lurking threat from within.”).

121. Ko, *supra* note 73; see also *Industry at a Glance*, USAPPLE, <https://usapple.org/industry-at-a-glance> [<https://perma.cc/C82Y-EK7N>] (last visited Feb. 24, 2021) (estimating the downstream value of the annual apple crop is \$15 billion).

122. See 15 U.S.C. § 1051(a) (2018); *id.* § 1127.

variety of apple—reflecting the poor fit between public ordering and apple orchards. To protect the newly rediscovered variety, the finder can trademark a brand, market the brand, and license others to distribute that brand.

In his Pulitzer Prize-winning novel, *The Overstory*, Richard Powers wrote that “a named apple is a patentable apple.”¹²³ This is not true—but is indicative of how entrenched in society the notion of branding and patenting an apple has become. The first successfully branded apples—The Pink Lady and the Honeycrisp—are no longer under patent.¹²⁴ These branded apples, costing much more than the Red Delicious, changed the face of the apple market.¹²⁵ For the first time, apple growers realized that consumers would pay designer prices for designer apples.¹²⁶ One of the earliest designer apples, the Pink Lady, is actually a brand used for several different varieties including Cripps Pink, Rosy Glow, or Lady in Red cultivar.¹²⁷ Growing a Cripps Pink apple does not require a license; however, to grow and sell a Pink Lady-branded, Cripps Pink apple, the farmer must pay a fee to the brand holder.¹²⁸ The brand holder then invests that fee in marketing the Pink Lady apple to educate consumers to ask for an apple by brand, not by color.¹²⁹ Consumers choose to pay the higher prices branded apples demand, and farmers notice.¹³⁰ The market has spoken, and the search continues for the next profitable cultivar.¹³¹

Trademarks provide many layers of protection for registrants and have proven particularly intriguing for agricultural innovators seeking to

123. RICHARD POWERS, *THE OVERSTORY* 162 (2018).

124. Apple Tree Cripps Pink cultivar, U.S. Plant Patent No. 7,880 (issued June 9, 1992); Apple Tree: Honeycrisp, U.S. Plant Patent No. 7,917 (issued Mar. 20, 1990).

125. Richard Lehnert, *Who’s Going to Sell All These Apples? And Who’s Going to Buy Them?*, GOOD FRUIT GROWER (June 1, 2015), <https://www.goodfruit.com/whos-going-to-sell-all-these-apples/> [<https://perma.cc/Q2H2-655P>] (“Whether they’re club apples, new apples, old apples, or just apples, there are a lot of apples being produced in North America, and more coming from a spate of recent plantings.”). The author argues that the data illustrates that apple growers are on a path to “[g]row more Honeycrisp and find more varieties like them. *Id.*”

126. *Id.*

127. Geraldine Walker, *Pink Lady, the Brand Pioneer: New Sports of Cripps Pink Will Be Sold Under the Pink Lady Brand*, GOOD FRUIT GROWER (Mar. 15, 2008), <https://www.goodfruit.com/pink-lady-the-brand-pioneer/> [<https://perma.cc/X5XC-4TKW>].

128. BRANDT’S FRUIT TREES, INC., PINK LADY® TRADEMARK LICENSE, <https://provarmanagement.com/wp-content/uploads/2019/02/Pink-Lady-Cripps-Pink-TM-License.pdf> [<https://perma.cc/NZ9N-H49M>].

129. *The Pink Lady® Trademark*, PINK LADY APPLES, <https://pinkladyapples.com/importers-retailers/the-pink-lady-trademark/> [<https://perma.cc/8E5M-K5WL>] (last visited Dec. 18, 2020) (“Pink Lady® is a brand. It is not a description or name of a tree or apple variety.”).

130. Lehnert, *supra* note 125.

131. Ko, *supra* note 73 (“The success of the Honeycrisp ushered in a new wave of designer apple breeds like Ambrosia, Jazz, Cosmic Crisp, Ruby Frost and Snap Dragon.”).

establish brands.¹³² Brand protection is best achieved through trademark law that protects any word, slogan, design, or symbol used to identify the source of origin of particular goods and services.¹³³ Hence, the trademark serves as a source identifier of goods and services, distinguishing one source of seed from another. A trademark allows an agricultural innovator to prevent others from confusing consumers, infringing the trademark or trading on another's business, and to ensure goodwill.¹³⁴ For a trademark to have benefit, however, the trademark must provide source identification to a consumer, and that requires marketing and consumer education. This adds to the cost of the apple and often results in the use of licenses to control that brand as well.

This rich array of publicly ordered protections still leaves many areas of innovation inadequately protected. The market demand and the inadequate fit of public ordering have led to the use of physical protections and private ordering as a way of augmenting available protection. Innovators, and those who invest in research and development, want to profit from their work. No matter what protection is offered, if there is no market, then the incentives are limited.¹³⁵ Public ordering and private ordering provide incentives for innovation, but the bottom line drives research and development. The most significant disconnect between public ordering and innovation occurs when the incentives provided by the market far outpace any incentives provided by public ordering. It is in this space that reformation must occur.

II. PRIVATE INCENTIVES FOR INNOVATION

Market demand may drive innovation, but innovation flourishes with protection. When market demand, public ordering, and private ordering all coexist, private ordering must be carefully examined to ensure that it does not subsume the public's interest in favor of the innovator. Reliance on private ordering signals a poor fit between the interests of the innovators and the publicly legislated protection offered to the consumer. Private ordering, however, does not necessarily reflect a broken market. Congress and courts should uphold public and private ordering pairs

132. In fact, some have argued that trademark protection may be more valuable than patent protection due to the limited duration of the patent right. *See, e.g.,* *Eli Lilly & Co. & Subsidiaries v. Comm'r of Internal Revenue*, 84 T.C. 996, 1167 (1985) (“[A]fter the patent's expiration, the trademark was the intangible with the greater value.”), *aff'd in part, rev'd in part*, 856 F.2d 855 (7th Cir. 1988).

133. *Id.*

134. *Id.*

135. Nicola Davison, *Why Can't We Cure the Common Cold?: After Thousands of Years of Failure, Some Scientists Believe a Breakthrough Might Finally Be In Sight*, *GUARDIAN* (Oct. 6, 2017, 1:00 AM), <https://www.theguardian.com/news/2017/oct/06/why-cant-we-cure-the-common-cold> [<https://perma.cc/ZY48-58LM>] (“You . . . can't do it if there's not a market at the end, you're wasting the company's money, and if you do that too often, you'll bankrupt the company” (internal quotation marks omitted)).

when the innovators' intentions are not to circumvent public restrictions. Private ordering helps enforce factors peculiar to a particular industry. But when private ordering removes rights from those without bargaining power and eliminates mandatory disclosure, then those contracts are violating public policy and ought not to be enforced.

In many ways, our intellectual property system is a poor fit for modern technology.¹³⁶ The duration of the patent term is a poor fit for agrobiotechnology innovations,¹³⁷ chefs and comedians are reluctant to rely on a system of rights that has historically not protected their arts,¹³⁸ software developers struggle to find a way to protect their innovations,¹³⁹ and genetic engineers are redesigning their innovations to avoid having to rely upon the laws for the protection of the technology. Absent change, those leading the evolution will leave the intellectual property system behind, seeking protection through forms that do not uphold the public's interest in building a storehouse of knowledge.

Innovators are turning away from relying solely on the intellectual property system for incentives for a number of reasons, including industry-specific factors, historical norms, market incentives, and gaps in the coverage of the publicly ordered system. When innovators rely on private ordering to fill in the gaps, the publicly ordered system of protection should be reevaluated by Congress to determine why the gaps exist in the first place.

In the field of culinary arts, for instance, chefs should not have to rely on non-disclosure agreements to protect recipes—instead, such recipes should be protected under copyright law.¹⁴⁰ A list of ingredients and the

136. OFFICE OF TECH. ASSESSMENT, INTELLECTUAL PROPERTY RIGHTS IN AN AGE OF ELECTRONICS AND INFORMATION iii (Apr. 1986), <http://www.princeton.edu/~ota/disk2/1986/8610/861007.PDF> [<https://perma.cc/ZN5N-FEVH>] (“Fundamental changes are occurring in information technologies that will antiquate many of the policy mechanisms now in force, and bring new intellectual property problems requiring new solutions.”).

137. See discussion *infra* Section II.D (Apples).

138. See discussion *infra* Section II.B (Comedians) & II.C (The Culinary Arts).

139. See discussion *infra* Section II.A (Software).

140. See, e.g., *Uncle B's Bakery, Inc. v. O'Rourke*, 920 F. Supp. 1405, 1413–14 (N.D. Iowa 1996). The bagel bakery carefully guards its recipes as trade secrets. [A]nyone who visits Uncle B's Bakery's plant is required to sign a confidentiality agreement. Indeed, employees are instructed that if any unescorted person appears in the plant, that person is to be escorted to the company's offices to complete a confidentiality agreement before he or she can conduct any other business or visit any portion of the plant.

Id. at 1413. In addition, the bagel bakery requires all of its suppliers to “keep confidential Uncle B's Bakery's use of particular machinery or supplies” and, in some cases, “forbidding the suppliers from providing identical products to Uncle B's Bakery's competitors, as well as requiring them not to disclose Uncle B's Bakery's use of such products.” *Id.* at 1414. Finally, all employees must sign a “non-disclosure/non-compete” at the start of their employment. *Id.* at 1416. The agreement covers “the development of original and unique recipes, ingredients, manufacturing techniques, packaging techniques, proceses [sic] involved in the

process of making it may not be copyrightable,¹⁴¹ but the fixed representation of the dish consumed should be protectable. Food can be art, and art is copyrightable.¹⁴² Recipes are a description of a process but a description that disseminates an artist's knowledge. Kitchens should not have to rely on non-compete agreements to protect their investments in the culinary arts.

The agrobiotechnology innovators and the genetic engineers have a physical form of intellectual property to work with—where the marketable product and the innovation are one and the same. This presents industry-specific issues—if a bacterium is sold, then the purchaser has complete access to the innovation. In these heavily concentrated fields, there are tremendous barriers to entry, and no single form of intellectual property has proven a natural fit.¹⁴³ As a result, the innovators are changing the technology itself, as well as seeking to partner private and public ordering together. At one point in history, physical protection of such technology involved a lock and key, whereas today that protection may involve changing the nature of the intellectual property—turning the individual bacterium into its own physical protection.¹⁴⁴ Our intellectual property system should not be incentivizing innovation that seeks to terminate itself.

production and/or packaging of Employer's products, equipment brands and types used, and trade secrets for the production and packaging of bread products." *Id.* at 1414 (alteration in original); see also Christopher J. Buccafusco, *On the Legal Consequences of Sauces: Should Thomas Keller's Recipes Be Per Se Copyrightable?*, 24 CARDOZO ARTS & ENT. L.J. 1121, 1151 (2007) (explaining the potential for a relationship between culinary arts and copyrights).

141. *Publ'ns Int'l, Ltd. v. Meredith Corp.*, 88 F.3d 473, 480 (7th Cir. 1996).

142. 17 U.S.C. § 102(a)(5) (2018) ("Copyright protection subsists . . . in pictorial, graphic and sculptural works . . .").

143. David A. Domina & C. Robert Taylor, *The Debilitating Effects of Concentration Markets Affecting Agriculture*, 15 DRAKE J. AGRIC. L. 61, 79 (2010); Philip H. Howard, *Visualizing Consolidation in the Global Seed Industry: 1996–2008*, 1 SUSTAINABILITY 1266, 1270–71 (2009), <http://www.mdpi.com/2071-1050/1/4/1266/> [<https://perma.cc/77NX-6CBJ>]; Rebecca K. Stewart, *Weeds, Seeds & Deeds Redux: Natural and Legal Evolution in the U.S. Seed Wars*, 18 STAN. TECH. L. REV. 79 (2014).

144. For instance, a pair of researchers developed a new technique, whereby a genetically modified organism inserted into an organism eliminates its own genetic modification before it dies. Bob Yirka, *Researchers Use CRISPR to Create "Kill Switch" for GMOs*, PHYS.ORG (May 20, 2015), <https://phys.org/news/2015-05-crispr-gmos.html> [<https://perma.cc/MDP2-LXV3>]. This technique was partly designed to protect trade secrets. If the organism can eliminate its own modification, the organism itself prevents others from seeing the particular genetic modification made. Brian Caliendo & Christopher A. Voight, *Targeted DNA Degradation Using a CRISPR Device Stably Carried in the Host Gene*, NATURE COMM., May 2015, at 2, <https://www.nature.com/articles/ncomms7989> [<https://perma.cc/H9G5-5CXL>] ("The ability to programme cells to eliminate engineered DNA at a defined time point or change in environments would benefit many applications in biotechnology. For example, after bio-manufacturing a chemical, cells could be programmed to degrade their DNA at the end of the process or when they are removed from a defined medium. This would aid the protection of sequence information as a trade secret . . .").

Comics have long felt that the intellectual property system is a poor fit for humor because some jokes are meant to be shared, some are meant to survive multiple lifetimes with attribution to a single author,¹⁴⁵ and some are simply used without attribution. Stand-up comics use private ordering to supplement the available copyright protection for their humor. This may result in a greater harm to competition than the comedians fully understand. The aggregate impact of copyright protection, private ordering, and self-regulation needs to be closely examined in order to better promote the public's and comedians' interest.

Software was the true game-changer behind the shift from publicly ordered protection to privately ordered protection.¹⁴⁶ Originally, software was something so new that no intellectual property protection applied. Developers turned to licenses while pushing for change in the publicly ordered protections offered.¹⁴⁷ Today, software is protected through a robust system of licenses, patent law, trademark law, and copyright law. Even still, changes could be made to the protections offered software.

The use of contracts to privately legislate and incentivize innovation is fundamentally different from the publicly legislated grant of rights and incentives. For instance, innovators have a very limited ability to control their works after the first sale if they are relying solely on publicly ordered rights. Although limited in enforcement by the requirement of privity, the use of contracts to license a product instead of selling it can circumvent those restrictions.¹⁴⁸ This betrays the bargain sought by Congress and the courts in granting these protections in the first place. The incentives provided by private ordering are exceeding the scope of traditional intellectual property rights and expanding the protection of intellectual property. This lack of protection has wide-ranging implications.

Enforcing privately negotiated agreements that circumvent public legislation vitiates the existing statutory scheme of intellectual property protection. Contracts, licenses, and self-regulation require trust and power.¹⁴⁹ The intellectual property system protects the public but will only be used as long as its benefits outweigh its restrictions. A careful balance must be struck between the benefits of private ordering and the re-

145. When a comic says "I came to a fork in the road and took it," no one would think that comic was doing anything other than quoting the great Yogi Berra, for instance. *When You Come to a Fork in the Road, Take It*, QUOTE INVESTIGATOR (July 25, 2013), <https://quoteinvestigator.com/2013/07/25/fork-road/> [<https://perma.cc/CTM2-D2UH>].

146. See, e.g., Christian H. Nadan, *Software Licensing in the 21st Century: Are Software "Licenses" Really Sales, and How Will the Software Industry Respond?*, 32 AIPLA Q.J. 555, 574 (2004).

147. *Id.*

148. See *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339, 350 (1908).

149. For a longer discussion of this issue, see M. TODD HENDERSON & SALEN CHURI, *THE TRUST REVOLUTION: HOW THE DIGITIZATION OF TRUST WILL REVOLUTIONIZE BUSINESS AND GOVERNMENT* (2019).

strictions of public ordering to ensure that the proper incentives are in place to promote the progress of science and the useful arts.

A. *Software*

Privately legislating innovation protection did not take root and flourish until computer software arrived on the scene. Software was new and brought with it no consumer-expected set of rights. Innovators took advantage of the lack of consumer rights and inadequate statutory scheme to protect their software innovations.¹⁵⁰ Software was different and difficult to protect. Consumers purchasing a book brought a preconceived notion of a set of rights, one that did not limit the consumer's use of the book.¹⁵¹ No such notion, however, existed for software. Software was new, difficult to protect, expensive to develop, and easy to replicate.¹⁵² There was market demand, tremendous innovation, and a poor fit with public ordering. As a result, the software industry promulgated a standard of private legislation, whereby licensing products that embody intellectual property became the norm.¹⁵³ This model proved profitable.

In the absence of clear, publicly ordered protection for software innovations, the use of contracts to supplement intellectual property protection gained popularity.¹⁵⁴ Copyright law was a poor fit, and the question of whether software is patent-eligible or not was fraught with doubt, thus, innovators sought protection for their innovations through private order-

150. See, e.g., *Adobe Sys. Inc. v. One Stop Micro, Inc.*, 84 F. Supp. 2d 1086, 1091–92 (N.D. Cal. 2000).

151. This preconceived set of rights is changing. Students are increasingly renting textbooks to avoid paying the high costs of ownership, professors are assigning links to articles rather than paying for republication rights, and new resources are being created to allow this to happen. The students who lease textbooks may be paying less for the book, but they are also receiving fewer rights—whether it is the right to resell the book, the right to use the book for other classes down the road, or even the right to write in and highlight the book. The professor who assigns a link, instead of paying for republication rights, is taking business away from the author and publisher of the original article—causing those parties to have to find new ways to earn a living. The distinction between the purchase of a book and the licensing of a piece of software, between the purchase of a physical recording of music, and the licensing of a download of music is blurring—as are the protections associated with each transaction.

152. See generally Ronald J. Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 TEX. L. REV. 961 (2005) (describing the role that patents play in the software industry).

153. See generally Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1251 (1995).

154. See, e.g., *Softman Prods. Co. v. Adobe Sys., Inc.*, 171 F. Supp. 2d 1075, 1083 (C.D. Cal. 2001) (“Historically, the purpose of ‘licensing’ computer program copy use was to employ contract terms to augment trade secret protection in order to protect against unauthorized copying at a time when, first, the existence of a copyright in computer programs was doubtful, and, later, when the extent to which copyright provided protection was uncertain.”).

ing.¹⁵⁵ Software developers licensed their products rather than selling them, using the contractual terms to augment the available public protection for ideas and expressions.¹⁵⁶ When software licenses augment the IP system, Congress and courts ought to enforce them, as they allow innovators to protect investments and the IP system to incentivize innovation. As patent protections expanded to cover software, the system saw a spike in filing seeking protection of software, the storehouse of knowledge increased, and competition between innovators became even more fierce.¹⁵⁷ At the same time, software developers continued to rely upon licenses to protect their inventions.

Licenses allow software developers more certainty in delineating the scope of protection than patent law. Abstract ideas, in and of themselves, are not patent-eligible.¹⁵⁸ Protection for the e-reader is far easier to delineate than protection for the data downloaded on the e-reader. And protection for data downloaded is still easier to delineate than protection for the software allowing the user to download the data. The e-reader is tangible, the data displayed on the screen may be tangible, but the software is intangible. Intangible, however, does not necessarily mean abstract—and it is this conundrum that renders protection so uncertain for software. The more barriers Congress and the courts presented to those seeking to protect software, the riskier applying for a software patent became.

Many developers have determined that the risks inherent in seeking patent protection for their software outweigh the benefits that such protection gives the patentees. Disclosing valuable information with no promise of a meaningful reward benefits the public and costs the innovator. The current diminished level of clarity as to what is patent-eligible yields unpredictable results—leaving patentees, potential infringers, and investors uncertain as to whether a patent issued today will be enforceable tomorrow.¹⁵⁹ Software developers, therefore, facing issues of protectability have turned increasingly to licensing their software, rather than selling it. Those licenses often contain clauses that completely eviscerate the restric-

155. See *Alice Corp. Pty. v. CLS Bank Int'l*, 573 U.S. 208, 221 (2014) (“[M]ethod claims, which merely require generic computer implementation, fail to transform that abstract idea into a patent-eligible invention.”).

156. See, e.g., *Softman Prods.*, 171 F. Supp. 2d at 1083.

157. See KEVIN G. RIVETTE & DAVID KLINE, *REMBRANDTS IN THE ATTIC* 17–18 (1999) (“The expansion of patentable subject matter into new and ever more abstract realms has always met with resistance. . . . [C]ritics warned that these new kinds of patents would be harmful to scientific discovery and innovation. And yet in each case, innovation and discovery actually intensified.”).

158. *Alice*, 573 U.S. at 221.

159. See, e.g., John P. Walsh, *Effects of Research Tool Patents and Licensing on Biomedical Innovation*, in *PATENTS IN THE KNOWLEDGE-BASED ECONOMY* 294 n.13 (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (“Some firms have also begun concentrating on their most promising targets, because of the high cost of maintaining patents and the low value of many . . . patents . . . that may not give rights to downstream developments . . .”).

tions on public ordering.¹⁶⁰ Private ordering is limited by privity, but when it is used to frustrate fair use, circumvent the first sale doctrine, withhold warranties, obstruct the on-sale bar, and withhold many other rights from the possessors of chattels, privity seems a small limitation indeed. Contracts are being used not to fill in the gaps, but to address the uncertainties currently present in public ordering and to circumvent the restrictions inherent in the intellectual property system.¹⁶¹

The publicly ordered restrictions protect the public interest—granting the public a limited set of rights during the patent term. The intellectual property system is robust in its protections—yet vague in its boundaries—which harms both the innovator and the public. Innovators are replacing the uncertainty of the intellectual property system, with clearly delineated protections in the form of licenses and contracts. Before the norm thus shifts permanently, careful consideration must be given to maintaining the balance between the interests of the public and intellectual property owners. Congress should legislate certainty and ensure that both innovators and the public are protected. Patent-eligible subject matter must have its definition further codified before the balance shifts from the public’s interest to the innovator’s interest. The intellectual property system is designed to protect software, but those protections must be delineated to allow developers to truly weigh the risks and benefits of seeking patent protection for their software innovation.

B. *Comedians*

In the stand-up comedy industry, private ordering has become the norm in protecting jokes.¹⁶² Copyright law can protect jokes, but copy-

160. Examples abound of intellectual property owners restricting the rights of consumers through licenses. James Gleick, *Fast Forward: It's Your Problem (Not Theirs)*, N.Y. TIMES, May 10, 1998, at 16, <https://www.nytimes.com/1998/05/10/magazine/fast-forward-it-s-your-problem-not-theirs.html> [<https://perma.cc/7ZLB-RJJH>] (“[T]he agreement that comes with Microsoft Agent, software that lets users create cute interactive animated figures, holds that you may not use the characters ‘to disparage Microsoft, its products or services.’”).

161. A plant patent, for instance, covers only the variety patented and not any mutations of that variety. Growers who license the WA 38 apple agree to promptly notify the patentee of “any mutation that may appear on Licensed Trees” and further agree that “ownership of, and title to, any such mutations” belongs to the patentee. WASH. STATE UNIV., NON-EXCLUSIVE GROWER AGREEMENT (WA 38 APPLE VARIETY), <https://provarmanagement.com/wp-content/uploads/2019/02/WA38-grower-contract.pdf> [<https://perma.cc/3QP8-BVP8>]. The license, therefore, directly circumvents the Plant Patent Act retaining for the patentee title to WA 38 mutations.

162. See Dotan Oliar & Christopher Sprigman, *There's No Free Laugh (Anymore): The Emergence of Intellectual Property Norms and the Transformation of Stand-Up Comedy*, 94 VA. L. REV. 1787, 1789 (2008) (failing to “find even a single copyright infringement lawsuit between rival comedians”). Comedians resort to private ordering to protect their jokes instead, making it “clear to comedy club booking agents that they would not appear in the same evening’s lineup with someone they believed either had stolen their material or had a reputation of stealing jokes.” *Id.* at 1817.

right infringement suits over humor are, at best, a joke.¹⁶³ There have been lawsuits involving the business of humor but not the intellectual property of a comedian.¹⁶⁴ This is, in no small part, because public ordering does not effectively protect authorship of jokes,¹⁶⁵ ownership,¹⁶⁶ and derivation; and issues of fair use and other exceptions undermine the ideas that comedians seek to protect in the first place.¹⁶⁷ Despite this, innovation flourishes,¹⁶⁸ relying on the industry standard of private ordering and self-regulation. Self-regulation gives comedians, who feel that their jokes were stolen, the ability to have the comedic thieves banned from clubs—a private injunction of sorts.¹⁶⁹ If that does not work, private ordering allows comedians to band together and block out a purported joke thief by refusing to appear on the same program or even at the same club as the thief.¹⁷⁰ Through self-regulation, comedians have come up with creative methods of protecting their material. For instance, in performing comedy at a club, comedians often rely on a light to tell them

163. *See generally id.*

164. *Id.* at 1798 n.32.

165. For instance, the following short poem has been recited for almost a century:

I eat my peas with honey,
I've done it all my life.
It makes the peas taste funny,
But it keeps them on the knife.

Yet, no author can be found for this poem. Public ordering has not fully protected the author of this poem. Attribution has been given to Ogden Nash and Shel Silverstein but has never been proven. Barry Popik, “*I Eat My Peas with Honey; I’ve Done it All My Life . . .*” (*Poem*), BIG APPLE (Feb. 1, 2011), https://www.barrypopik.com/index.php/new_york_city/entry/i_eat_my_peas_with_honey_ive_done_it_all_my_life [https://perma.cc/FV92-VXN7]. At the same time, no current comedian is seeking to use that humor, suggesting ownership or infringing on the anonymity of the original authorship.

166. Copyright protection is limited in its duration, while most comedians believe that you can never appropriate another’s joke, even long after the death of the originator. Oliar & Sprigman, *supra* note 162, at 1824.

167. *Id.*

168. *See, e.g.*, Brian Steinberg, “*Saturday Night Live*” Plans “*At Home*” Season Finale, VARIETY (May 7, 2020, 9:11 AM), <https://variety.com/2020/tv/news/saturday-night-live-at-home-season-finale-1234600748/> [https://perma.cc/4N4T-A9KG] (“‘SNL’ typically runs live in front of an in-studio audience whose reactions lend the program much of its energy and ambiance—and add an element of ‘anything could happen’ to its proceedings. But the advent of the coronavirus pandemic has made producing a typical program impossible. Producers at the venerable late-night series, supervised by Lorne Michaels, have created a series of ‘at home’ episodes, featuring taped sketches cobbled together by cast members sheltering at home and other production staff.”).

169. Oliar & Sprigman, *supra* note 162, at 1815 (“The guy [who thinks he’s been stolen from] is going to try to get the [other comedian] banned from clubs.” (alterations in original)).

170. *Id.* at 1817 (“A number of interviewees told us of instances where they made clear to comedy club booking agents that they would not appear in the same evening’s lineup with someone they believed either had stolen their material or had a reputation of stealing jokes.”).

when their time is up.¹⁷¹ That light can be used to signal a comedian that a potential infringer is in the house, allowing the comedian to switch to material that the comedian is less protective of.¹⁷² Such self-regulation and private ordering has allowed for innovation in the stand-up comedy arena. When these contracts do not breach the public's trust and operate within the boundaries set by antitrust law, then they should be enforced—allowing, as they do, for industry standards to promulgate protections. Comedians do not have to go to court to provide infringement of their act (a difficult case to make, particularly in a timely fashion), and the comics and clubs can work together to promote the interests of all.¹⁷³ On the other hand, when comedians take private ordering too far, it should not be enforced.

One comedian, for instance, required those attending a show to sign a non-disclosure agreement.¹⁷⁴ The venue where the comedian performed sent the non-disclosure agreement to ticket purchasers and denied entrance to those refusing to sign the contract.¹⁷⁵ The agreement stated: “the individual shall not give any interviews, offer any opinions or critiques, or otherwise participate by any means or in any form whatsoever (including but not limited to blogs, Twitter, Facebook, YouTube, Instagram, or any other social networking or other websites whether now existing or hereafter created).”¹⁷⁶ The non-disclosure agreement con-

171. See, e.g., *Open Mic Comedians Code of Conduct*, MCCURDY'S COMEDY THEATRE & HUMOR INST., <https://www.mccurdyscomedy.com/theatre/conduct.cfm> [<https://perma.cc/JNF8-ELSH>] (last visited Feb. 24, 2021) (“Your time begins from the moment the host has introduced you. There is a light and clock on a stool on the front corner of the stage. When you have one minute left in your set the light will come on and stay on. When you have arrived at the end of your time the light will flash a few times and then the music will gradually fade up. You should have your set timed so that you don't need the light. That is a step in the right direction towards being a professional.”).

172. Larry Getlen, *Take the Funny and Run: How Some of the Biggest Names in Comedy Built Their Careers on Pilfered Punchlines*, RADAR (Feb. 14, 2007), quoted by William Patry, *Jokes and Copyright*, PATRY COPYRIGHT BL. (Jan. 29, 2008), <http://williampatry.blogspot.com/2008/01/jokes-and-copyright.html> [permalink unavailable] (“Anyone who has ever performed stand-up is familiar with the red light, the universal signal that warns dawdlers it's time to wrap things up. In the '80s, comics at the Hollywood Improv came up with a novel use for the light. When shining steadily, it had the conventional meaning. But if the bulb began sputtering, it was the comedic equivalent of an air-raid siren, warning performers to lock up their original material immediately unless they wanted to lose it to a master thief. Robin Williams, comedy's most notorious joke rustler, was in the house.”).

173. The lack of effective protection is, in part, because comedians believed that bringing suit over stolen material was simply too expensive. Olliar & Sprigman, *supra* note 162, at 1800–01.

174. Meredith Woerner, *Pete Davidson Asks Fans to Sign \$1 Million NDA Before Comedy Show*, VARIETY (Nov. 30, 2019, 2:54 PM), <https://variety.com/2019/tv/news/pete-davidson-nda-sign-snl-saturday-night-live-dave-chappelle-1203420180/> [<https://perma.cc/SKN4-HTG6>].

175. *Id.* (“After refusing to sign the NDA emailed to her from the venue, [one ticket-holder] was given a full refund . . .”).

176. *Id.*

tained a liquidated damages clause assessing the damages for a breach at \$1 million.¹⁷⁷ It is a joke to suggest that the intellectual property was worth that amount, but the chilling effect of that liquidated damages clause is significant enough that it is unlikely a court would have the opportunity to determine its punitive nature and enforceability.

Public ordering protects humor. The Constitution gives Congress the power to secure to authors the exclusive right to their writings for a limited time.¹⁷⁸ Comics are authors. However, copyright law does not extend to an idea—so if the amusing part of the humor is not the wording but the idea behind it, protecting that idea is not possible. Furthermore, comedy is often time-sensitive, and by the time one comic sues another comic for infringement and wins, the time for the humor may have passed. Legislating additional incentives for comedy would be difficult, expensive, and require a fundamental shift in the industry norms. Private ordering and self-regulation allow for timely and inexpensive humor protection that favors the successful in a way that public ordering does not. For instance, Pete Davidson could require fans to sign a non-disclosure agreement because fans were eager to watch Pete Davidson. On the other hand, Comedienne Jane, still working to build up an audience, would lack the same ability to dictate terms to her audience—eager as she might be to simply have an audience in the first place. That being said, the industry standards and norms in comedy seem to indicate that private ordering works. When private ordering is extended too far—favoring the innovator and those with market power over the public interest—it runs counter to the policy choices made in promulgating public ordering. The limits on public ordering are there for a reason, and as long as the private ordering upholds those limitations, it should be enforced. In other words, if private ordering is used to provide an efficient and effective way of policing infringement, then it is working, but when private ordering seeks to take away rights that the public is entitled to—through a non-compete or other means—the contract violates public policy and cannot be enforced.

C. *The Culinary Arts*

The kitchen gives us yet another area that public ordering fails to protect. Recipes can rarely be patented,¹⁷⁹ copyright protection does not

177. *Id.* (“In the event of breach of this agreement, individual shall pay company, upon demand, as liquidated damages, the sum of one million dollars, plus any out of pocket expense.”). It is highly unlikely that Davidson would be able to recover that sum, since he would have to prove the amount was not disproportionate to his actual harm—but it is certain that such a clause would have a chilling effect on those thinking about breaching.

178. U.S. CONST. art. I, § 8, cl. 8.

179. That being said, there are some recipes that meet the stringent patentability standards and have resulted in legal protection. For example, U.S. Patent No. 4,455,333 (issued June 19, 1984), entitled *Doughs and Cookies Providing Storage-Stable Texture and Variability* (the ‘333 Patent), claims a cookie made from two different cookie doughs which, when baked, produces a cookie product with a crispy

extend to a functional list of ingredients,¹⁸⁰ and trade secret protection has its limitations.¹⁸¹ So, how to protect the investment in developing a new food industry, a novel restaurant concept, or a unique recipe? Investors, innovators, and restaurateurs have increasingly turned to private ordering to protect their innovations.

Chefs and restaurants are using contracts in innovative ways in the kitchen, the restaurant, and elsewhere.¹⁸² Noted chef Homaro Cantu of Moto Restaurant in Chicago was one who pushed the bounds of private ordering.¹⁸³ When dining at Moto, consumers at one point could order a dish made of edible paper—the paper tasted like cotton candy and was imprinted with cotton candy images. Also imprinted on the paper was the warning: “Confidential Property of and © H. Cantu. Patent Pending. No further use or disclosure is permitted without prior approval of H. Cantu.”¹⁸⁴ Elegantly showcasing the grafting of public and private ordering, Chef Cantu patented his innovation while still relying on a contract with the diner to control all further use and disclosure of the dish.¹⁸⁵ Under the first sale doctrine, once Cantu sold his patented dish—presumably when the diner orders from his menu—Cantu could not rely on his patent rights to restrict the diner’s use or redistribution of the dish.¹⁸⁶ The private ordering here, where the diner agrees to a contract with the chef and may take possession of the intellectual property (but not use it

and chewy texture. Claim 35 of the ’333 patent defines the process for making the final cookie product from two different doughs, which are made from “typical cookie ingredients” such as sugar, flour, water, and shortening, and are conventional cookie doughs differing only in the type of sugar that is used to prepare them. The claim was later invalidated as anticipated but still serves as an example of a recipe that consists of patent-eligible subject matter. *Procter & Gamble Co. v. Nabisco Brands, Inc.*, 711 F. Supp. 759, 776 (D. Del. 1989).

180. *Publ’ns Int’l, Ltd. v. Meredith Corp.*, 88 F.3d 473, 480 (7th Cir. 1996).

181. Even if a trade secret is stolen, recourse can be had only if the judicial system agrees with the owner of the trade secret that the trade secret existed in the first place. In one example, a bakery alleged that their secret “famous salted caramel brownie recipe” had been stolen. The judge ruled that there was no trade secret theft because the recipe was hardly unique. *See Vrailment Hosp., LLC v. Binkowski*, No. 8:11-CV-1240-T-33TGW, 2012 WL 1493737, at *14 (M.D. Fla. Mar. 19, 2012), *report and recommendation adopted by* 2012 WL 1470309 (M.D. Fla. June 6, 2011).

182. *See, e.g.*, Pete Wells, *New Era of the Recipe Burglar*, *FOOD & WINE* (Mar. 31, 2015), <https://www.foodandwine.com/news/new-era-of-the-recipe-burglar> [<https://perma.cc/C5FY-9MNW>].

183. *Id.*

184. *Id.*

185. *See, e.g.*, System and Methods for Preparing Substitute Food Items, U.S. Patent No. 7,307,249 (issued Dec. 11, 2007); *see also* Wells, *supra* note 182 (“In Cantu’s view, licensing his intellectual property is a more efficient way to tap new revenue streams than opening a casual Moto brasserie across the street.”).

186. There is one exception. If the product in question is patented, then post-sale restrictions may be placed on the product if such restrictions are reasonably related to the patent and are less than the scope of the patent itself. *See Malinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 708–10 (Fed. Cir. 1992).

further without permission of the chef), frustrates the first sale doctrine—allowing the chef to have his cake and eat it too. To protect his intellectual property, Cantu relied on private ordering rather than the more casual industry standard of information trading.¹⁸⁷ Cantu carried this through to all parts of his restaurant. Before being allowed to enter Cantu’s kitchen, chefs had to sign a four-page non-disclosure agreement—giving Cantu a remedy if copying occurred.¹⁸⁸ Private ordering protected what public ordering could not.

On the other hand, using non-compete agreements to infringe upon the rights of an employee in a commercial kitchen could violate public policy. In 2014, many employees of Jimmy John’s sandwich signed the following non-compete clause when entering into employment with the company:

Employee covenants and agrees that, during his or her employment with the Employer and for a period of two (2) years after . . . he or she will not have any direct or indirect interest in or perform services for . . . any business which derives more than ten percent (10%) of its revenue from selling submarine, herotye, deli-style, pita and/or wrapped or rolled sandwiches and which is located with three (3) miles of either [the Jimmy John’s location in question] or any such other Jimmy John’s Sandwich Shop.¹⁸⁹

Such non-compete clauses are often used to protect a firm’s intellectual property, trade secrets, and investment in its valuable employees. This clause protected neither and should not be enforceable.¹⁹⁰ It may be easier to find a bargained-for exchange when a famous chef signs a non-compete agreement as part of their employment by a well-known

187. Buccafusco, *supra* note 140, at 1152–53 (discussing interviews with a number of chefs who said that sharing was part of the kitchen culture). One chef stated “I write cookbooks and teach classes so folks will use my recipes. I am quite happy when a layperson uses my recipes and I would also be just as happy, maybe more so, if a professional were to, provided that they gave credit in some way shape or form.” *Id.* (internal quotation marks omitted) (quoting Email from Norman Van Aken, Executive Chef-Owner, Norman’s, to Christopher J. Buccafusco (Aug. 3, 2006) (on file with author)).

188. *See* Wells, *supra* note 182.

189. Dave Jamieson, *Jimmy John’s Makes Low-Wage Workers Sign “Oppressive” Noncompete Agreements*, HUFFINGTON POST, https://www.huffpost.com/entry/jimmy-johns-non-compete_n_5978180 [<https://perma.cc/J6XL-882Z>] (last updated Oct. 15, 2014) (alterations in original).

190. Even though a recipe may be a closely-held trade secret, it may still be lawfully reverse-engineered. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974) (“A trade secret law, however, does not offer protection against discovery by fair and honest means, such as by independent invention, accidental disclosure, or by so-called reverse engineering, that is by starting with the known product and working backward to divine the process which aided in its development or manufacture.”).

restaurant.¹⁹¹ The chef may be a valuable employee who is entrusted with a restaurant's trade secrets—but what should that non-compete be allowed to cover? When a chef leaves, should the chef be able to take their signature dishes with them, or should the contract be allowed to control the dish itself?¹⁹² If a particular dish is not protectable through public ordering, why do we allow private ordering to control the dish? Such a non-compete clause may be bargained for, but at what cost to all? More than one chef has found their careers crippled by a non-compete. Upon moving to New York to become the Executive Chef of the Williamsburg Hotel, Chef Adam Leonti signed a contract that promised him \$130,000 a year. Unfortunately, this contract also contained a non-compete clause stating that Leonti could not “work at any food-service establishment in all of New York City for one year if he were to resign.”¹⁹³ During his time at the Williamsburg Hotel, Leonti developed not a single recipe, gained access to no proprietary information, and yet, upon his resignation, was held to his non-compete agreement and could not cook for any other restaurant in New York City.¹⁹⁴ He was forced to choose between his livelihood and his residence due to a contract he signed.

Innovation occurs in the kitchen, despite a lack of publicly ordered adequate protection for recipes.¹⁹⁵ Much of that innovation occurs absent private ordering or other forms of legal protection. Chefs engage in information trading—where they pass on tricks they have learned and benefit from the receipt of similarly valuable information.¹⁹⁶ Further-

191. This may be true even when the non-compete limits the chef's ability to use his own name. See, e.g., Amy McCarthy, *Kent Rathburn Legally Can't Call Himself "The Chef With No Name,"* DALL. OBSERVER (Apr. 12, 2017), <https://dallas.eater.com/2017/4/12/15273604/dallas-kent-rathburn-nickname-injunction-aba-cus-lawsuit> [permalink unavailable].

192. See, e.g., Erik Weibust & Anne Dunne, *Fettucine Al Fraudo—New York Pizzaiolo in Hot Water After Alleged Theft of Secret Pasta Recipe*, SEYFARTH: TRADING SECRETS (Dec. 11, 2019), <https://www.tradesecretslaw.com/2019/12/articles/non-compete-enforceability/fettucine-al-fraudo-new-york-pizzaiolo-in-hot-water-after-alleged-theft-of-secret-pasta-recipe/> [https://perma.cc/8QUW-H3U8] (“[The chef] signed a non-compete and non-disclosure agreement in connection with his hiring, under which [the chef] agreed, for ten years, to not replicate, copy, or duplicate . . . its ‘signature recipes’ for arancine, pasta alla norma, caponata, anelletti al forno, and carbonara di mare, or to use the signature recipes within a ten mile radius of [the] restaurant.”).

193. Andrea Strong, *Non-Compete Agreements Can Be Crippling For Chefs*, EATER (Oct. 13, 2017, 11:22 AM), <https://www.eater.com/2017/10/13/16459044/non-competes-chefs-how-do-they-work> [permalink unavailable].

194. *Id.*

195. See, e.g., Jess Kapadia, *The 20 Wildest, Weirdest and Most Delicious Recipes of the Year*, FOOD REPUBLIC (Dec. 21, 2015), <https://www.foodrepublic.com/2015/12/21/the-20-wildest-weirdest-and-most-delicious-recipes-of-the-year/> [https://perma.cc/F6NL-GCSV] (writing about experiencing “recipe developer Paul Harrison’s patented In-N-Out grilled cheese. It’s not actually patented—you can’t patent a grilled cheese, let alone one that someone else created.”).

196. See Emmanuelle Fauchart & Eric von Hippel, *Norms-Based Intellectual Property Systems: The Case of French Chefs*, 19 ORG. SCI. 187, 194 (2008) (“In the case of

more, chefs abide by a strong industry norm that chefs will not copy another's recipe identically.¹⁹⁷ That being said, copying happens.¹⁹⁸ For example, Chef Robin Wickens came and studied at Alinea, Grant Achatz's restaurant in Chicago.¹⁹⁹ Wickens learned from the best, returned home to Australia, and immediately began recreating Alinea's signature dishes.²⁰⁰ Wickens did so well that even Chef Achatz had to admit he was impressed—and furious.²⁰¹ The terms food forgery and plagiarism describe what Wickens did, but Achatz had few rights he could enforce against Wickens.²⁰² Despite this, Achatz still is not in favor of relying on public ordering to protect his life's work.²⁰³

Self-regulation works well in this environment and, when coupled with copyright law, promotes equally the interests of all parties. Thus, legislatures need to closely examine contracts to determine whether they abide by industry standards. If not, legislators must decide whether the contracts circumvent protections offered by the copyright system by frustrating the first sale doctrine and preventing flow of employees and information necessary for innovations in the culinary arts.

D. *Apples*

Agrobiotechnology is protected by a vast array of private and publicly ordered regulations. The PVPA, plant patents, utility patents, and trademarks all play a valuable role in the promotion of innovation in the fields

accomplished chefs, one type of opportunity to make such a decision occurs when colleagues working in other restaurants request specific items of recipe-related information. . . . Of the chefs in our sample, 90% report being asked for such information at least once in the past year, and 28% report being asked at least six times.”).

197. *Id.* at 192–94.

198. It is worth noting that copying happens often enough that culinary trade associations promulgate internal regulations stating that members should respect the intellectual property of other members and not copy recipes. See J. Austin Broussard, *An Intellectual Property Food Fight: Why Copyright Law Should Embrace Culinary Innovation*, 10 VAND. J. ENT. & TECH. L. 691, 709 (2008) (“[T]he International Association of Culinary Professionals, a 4,000 member, non-profit organization of individuals ‘engaged in the areas of culinary education, communication, or in the preparation of food and drink,’ expects its members to ‘[r]espect the intellectual property rights of others and not knowingly use or appropriate to [one’s] own financial or professional advantage any recipe or other intellectual property belonging to another without the proper recognition.’ Likewise, the United States Personal Chef Association instructs its members, who prepare in-home meals for clients, ‘[t]o respect the intellectual property of [one’s] peers by not copying, reproducing or in any other way utilizing their written or published materials as [one’s] own, even when this work has not been explicitly protected by copyright, patent, etc.’” (footnote omitted) (second, third, fourth, and fifth alterations in original)).

199. Fauchart & von Hippel, *supra* note 196.

200. *Id.* at 197–98.

201. *Id.*

202. *Id.*

203. *Id.*

and orchards.²⁰⁴ If licenses reinforce publicly ordered protections, they give agricultural innovators greater control over plant variety than the intellectual property system alone would allow and enhance economic value.²⁰⁵ Grafting private ordering onto public ordering is proving to be the foundation of intellectual property innovation in agrobiotechnology.²⁰⁶

In the apple orchard, the concept of a managed apple provides one lens into controlling a plant variety through public and private ordering. Star Fruits, a fruit variety license manager, introduced the first managed apple in 1978.²⁰⁷ The apple itself was not a success, but the idea had taken seed, and Star Fruits began looking for an apple they could profitably develop, license, and market.²⁰⁸ Investing in the Cripps Pink apple, Star Fruits branded it as a “Pink Lady” apple and instituted strict requirements on the brand, the growing conditions, the distributors, and the like.²⁰⁹ Star Fruits managed every aspect of the life cycle of the Pink Lady apple, from where it could be planted to where it could be sold—hence the name managed apple. Growers of the “Pink Lady” apple paid a premium to Star Fruits for the privilege of growing and for Star Fruits’ efforts to promote the brand. A grower could grow a Cripps Pink apple without

204. See 7 U.S.C. §§ 2042, 2483 (2018); 35 U.S.C. §§ 101, 161 (2018).

205. In 2020, for instance, grapes could be purchased at the grocery store that were marked with an End User License Agreement placing the following restrictions on recipients of Carnival Brand Grapes: “The recipient of the produce contained in this package agrees not to propagate or reproduce any portion of the produce, including ‘but not limited to’ seeds, stems, tissue and fruit.” Matthew Gault, *Proprietary Grapes Come With Draconian End User License Agreement*, VICE (Oct. 14, 2020, 9:00 AM), <https://www.vice.com/en/article/m7jm4y/proprietary-grapes-come-with-draconian-end-user-license-agreement> [<https://perma.cc/3MFJ-6UK3>].

206. Charles, *supra* note 40 (“There’s an apple renaissance underway, an ever-expanding array of colors and tastes in the apple section of supermarkets and farmers markets. Less visible is the economic machinery that’s helping to drive this revolution. An increasing number of these new apples are ‘club apples’—varieties that are not just patented, but also trademarked and controlled in such a way that only a select ‘club’ of farmers can sell them.”).

207. Melissa Hansen, *The Origin of Club Varieties*, GOOD FRUIT GROWER (Nov. 1, 2008), <https://www.goodfruit.com/the-origin-of-club-varieties/> [<https://perma.cc/T33A-2WFX>].

208. Star Fruits, *Pink Lady, A Global Success Story*, STAR-FRUITS, <https://www.star-fruits.com/pink-lady-license-manager/a-global-success-story/?lang=en> [<https://perma.cc/8UP5-NAYT>] (last visited Jan. 31, 2021).

209. The original Pink Lady apple, the Cripps Pink, was first bred by John Cripps at the Department of Agriculture in Western Australia (DAFWA). Garry Langford, *The Birth of APAL’s Pink Lady Business*, APAL (Mar. 29, 2016), <https://apal.org.au/birth-apals-pink-lady-business/> [permalink unavailable]. DAFWA went on to create the Pink Lady trademark as well at a time when “the concept of using a trade mark to protect an apple product was a significant innovation in [the] industry.” *Id.* The trademark was assigned to Australian Apple and Pear Growers Association (AAPGA), the predecessor to today’s Apple & Pear Australia, Ltd. (APAL). *Id.* APAL remains the Australian Pink Lady trademark holder, and licenses it to the International Pink Lady Alliance. *Id.*

paying Star Fruits but would not benefit from Star Fruits' investment in the Pink Lady brand. Developers of managed apples, like Star Fruits, rely on trademark law and licenses to impose numerous restrictions on how these varieties can be grown, marketed, packaged, and processed.²¹⁰

Today, many popular apples are managed apples,²¹¹ including Cosmic Crisps, SweeTangos, Zestars, and Envies.²¹² Furthermore, many of these managed apples are club apples, a more recent refinement of the managed apple concept.²¹³ Managed and club apples both restrict the rights of the growers. Anyone can license a managed apple, but to grow a club apple, a farmer must belong to that club. Members of that club are licensed to reproduce the club apples, which are often patented and trademarked.²¹⁴ The club markets and promotes the apples for which it controls the licenses.²¹⁵ Clubs are expensive.²¹⁶ Club members bear the costs of growing the apple, of marketing, promoting, and controlling the apple, and of researching and developing new apple varieties.²¹⁷ Club varieties may charge growers a per-tree royalty, a box sales charge, a per box charge for promotion, and a royalty on apples sold, among other costs.²¹⁸ Managed apples are controlled in a similar fashion to club apples, but growers do not have to belong to a club. Growers have fewer rights when growing managed and club varieties than in growing other

210. Washington State University, for instance, prohibits licensed growers from reselling or otherwise transferring licensed trees to third parties; from planting the licensed trees outside of the agreed upon licensed territory; or from using an unlicensed packer or processor to pack and process the licensed apples. WASH. STATE UNIV., *supra* note 161. And the university requires the licensed growers to take "all reasonable precautions to ensure that no third party obtains budwood or other propagation materials from the Licensed Trees." *Id.*; *see also* van Zoeren & Atucha, *supra* note 26.

211. Growing Produce Staff, *Managed Varieties: The Future*, GROWINGPRODUCE (Apr. 21, 2011), <https://www.growingproduce.com/fruits/managed-varieties-the-future/> [<https://perma.cc/93NE-74ER>] ("Almost all new varieties are now being introduced under some sort of managed program that hopes to restrict supply. However, that almost guarantees that none of them will become the next Gala (that is, a widely available, popular variety). It also means that their share of apple supplies will remain below 5% for many years." (internal quotation marks omitted)).

212. Abad-Santos, *supra* note 56.

213. *Id.*

214. *Id.*

215. *See* Geraldine Warner, *Study the Pros and Cons of Club Varieties: Would You Be Better Off Growing a Club Variety with High Returns, or a Less Restricted Variety With Lower Costs?*, GOOD FRUIT GROWER (July 1, 2006), <https://www.goodfruit.com/study-the-pros-and-cons-of-club-varieties/> [<https://perma.cc/6AN9-DMEC>] (For instance, one managed apple developer, Enza, "sets a worldwide production target and then decides who will grow the fruit. The quality of the fruit is controlled, and there's a detailed marketing plan.").

216. *Id.*

217. *Id.* ("To Grow Jazz or Pacific Rose, growers pay a \$2,000 per-acre fee to join the club, as well as sales charges and royalties.").

218. *Id.*

non-restricted varieties; but on the other hand, such apples also bring benefits. Star Fruits, for instance, handles the promotion of the Pink Lady apple and enforces all restrictions, so the grower simply has to grow the apple and bring it to market.

The patented SweeTango apple, released in 2009 by the University of Minnesota, is a club apple.²¹⁹ Initially labeled as MN 1914, the University exclusively licensed the SweeTango to “The Next Big Thing,” a growers cooperative.²²⁰ To commercially sell a SweeTango apple, a grower must bargain for a license with The Next Big Thing.²²¹ Minnesota growers who are licensed to grow SweeTango apples, but who are not members of The Next Big Thing cooperative, are limited to private sales of SweeTango apples to consumers.²²² Non-cooperative, non-Minnesota growers cannot license the trees that grow SweeTango apples.²²³ The license requires the grower to pay an annual, per-tree royalty fee to The Next Big Thing.²²⁴ There are further limits placed on the number of trees that can be licensed and how the fruit can be advertised.²²⁵ A license is not a sale. As a result, many of the restrictions that accompany sales of trademarked and patented goods can be circumvented through the contractual language of the license. For instance, to grow SweeTango apples, dealers must agree to grow no more than 1,000 trees and not pool their apples for sale to the wholesale market.²²⁶ If the dealers had purchased the SweeTango apples outright, then the dealers would be free to distribute the apples as the dealers wished. The consortium behind SweeTango pays the University of

219. The SweeTango is covered by U.S. Plant Patent No. 18,812 (issued May 13, 2008); see also Alyssa Vance, *The Building of a Brand: The SweeTango*, HEAVY TABLE (Oct. 14, 2019), <http://heavytable.com/the-building-of-an-apple-brand-the-sweetango/> [<https://perma.cc/FD8V-6YL7>] (describing the SweeTango and “buzz” around its creation).

220. *Id.*

221. A group of Minnesota apple growers sued the University of Minnesota seeking access to the SweeTango apple without having to go through The Next Best Thing cooperative. Arguing that a publicly funded university should not be able to develop a product and grant an exclusive license to sell that product, the growers alleged antitrust violations. They lost the suit. Matt Milkovich, *Litigants Settle SweeTango Dispute*, FRUIT GROWERS NEWS (Nov. 4, 2011), <https://fruitgrower-news.com/article/litigants-settle-sweetango-dispute/> [<https://perma.cc/6V34-V7WS>].

222. See *id.* (“Minnesota growers who weren’t members of Next Big Thing could grow [a limited supply of SweeTango apples]. . . provided they only sold the apples through direct-market channels and didn’t pool them for the wholesale market.”).

223. *Id.*

224. *Id.*

225. *Id.*

226. Steve Karnowski, *Hot New Apple: SweeTango, Spicy and Sweet*, EDGE: S.F. (Sept. 19, 2010), <http://www.edgesanfrancisco.com/index.php?ch=style&sc=home&sc3=&id=110473> [<https://perma.cc/P3JW-2599>].

Minnesota a royalty on the apple's net wholesale sales and controls the wholesale market for the SweeTango apple.²²⁷

Private ordering has shaped the SweeTango apple's availability, unlike its parent—the Honeycrisp apple—which was an open release governed only by publicly ordered restrictions.²²⁸ The Honeycrisp apple is a tremendously successful brand and one of the University of Minnesota's most profitable innovations. Even so, the temporal limitations on patent protection limited the university's profits on the Honeycrisp variety.²²⁹ To maximize profits from a new plant variety, return on the research and development costs must occur upfront with the sale of the physical plant itself or be amortized over the plant's life.²³⁰ Farmers have not yet proven ready to pay all the costs upfront, thus, amortization has to play a role in the return on research and development necessary. If an apple tree is sold, there is a limited time during which the developer can restrict the rights of the grower under patent law. For instance, the royalty cost for a Honeycrisp apple amortized to “less than a penny” over the useful life of the tree.²³¹

Private ordering gives the university stronger protections for the SweeTango apple and greater return on its investment.²³² Instead of selling SweeTango scionwood, the university licenses it, using private ordering to circumvent public legislation and control the SweeTango brand. By weaving together licenses and intellectual property protection, the university extended its control over the intellectual property embodied in the SweeTango apple.²³³ Growers who had purchased the Honeycrisp apple are now restricted to licensing the SweeTango apple.²³⁴ The expiration of the patent on the Honeycrisp signaled the end of restrictions on Honeycrisp growers. But the expiration of the patent on the SweeTango does not end all restrictions on the licensees of the SweeTango.²³⁵ Minne-

227. *Id.*

228. Ko, *supra* note 73.

229. *Honeycrisp Patent Expiration Not Expected to Change Sales*, FRUIT GROWERS NEWS (Jan. 8, 2008), <https://fruitgrowersnews.com/article/honeycrisp-patent-expiration-not-expected-to-change-sales/> [<https://perma.cc/9Q2P-KTP8>]; Allana Akhtar, *Everybody Loves Honeycrisp Apples—and That's Why They Are So Expensive*, NPR (Oct. 9, 2015), <https://www.michiganradio.org/post/everybody-loves-honeycrisp-apples-and-thats-why-theyre-so-expensive> [<https://perma.cc/T8MQ-5AEP>] (“[T]he royalty cost per apple is less than a penny . . .”).

230. Ashley Wright, *What Is America's Favorite Apple Variety?*, FARM FLAVOR (Sept. 19, 2018), <https://www.farmflavor.com/us-agriculture/americas-favorite-apple-variety/> [<https://perma.cc/KBJ7-9KUM>].

231. Akhtar, *supra* note 229.

232. Karnowski, *supra* note 226.

233. *Id.*

234. *Id.*

235. Pamela Parks, *The Family Tree to Better Apples*, EDIBLE DOOR (Sept. 1, 2013), <https://edibledoor.ediblecommunities.com/recipes/honeycrisp-sweetango-apples> [<https://perma.cc/EP62-77S7>] (“A twist on the typical release, SweeTango® is not really SweeTango® until the fruit is picked, sorted, and bagged for sale. The trees and fruit are technically called “Minneiska.”

sota should be able to profit from the SweetTango apple—but at what cost to the public?²³⁶ Such circumvention erodes the very foundation of public ordering and encourages monopolistic behavior on the part of the trademark owner.

Many licenses are used to ensure the integrity of the intellectual property as distributed to the consumer. Such licenses often restrict the licensee's use to a geographic region, duration of use, or field of use, augmenting publicly ordered rights.²³⁷ The limits on membership in The Next Big Thing allows the cooperative to place restrictions on the SweetTango's growing conditions.²³⁸ This restriction was important to the University of Minnesota, due to concerns with the open release Honeycrisp apple. A Honeycrisp apple seeded in an orchard planted with Red Delicious apples will take on the characteristics of the Red Delicious apple, through a phenomenon known as red drift.²³⁹ An apple so affected may look like a Honeycrisp but not have the exact taste and characteristics of a Honeycrisp apple.²⁴⁰ Honeycrisp innovators became concerned that, due to the absence of propagation restrictions, the apples being sold to consumers as Honeycrisp were not the best representatives of the brand.²⁴¹ Licensing the technology allows the innovator to place planting restrictions within its license terms, manage the apple's geographic release, and limit the impact of poor growing conditions, avoiding

SweetTango® is copyrighted and trademarked so when the patent runs out in 17 years, the UM will still have the control over the name and logo, unlike Honeycrisp. Growers pay a royalty for each tree planted and every pound of SweetTango® that is grown. The managed release is a new approach for apple growing but is not uncommon in other areas of study.”).

236. See Jacob H. Rooksby, *University™ Trademark Rights Accretion in Higher Education*, 27 HARV. J.L. & TECH. 349, 402 (2014) (“The loss is not necessarily that exclusive ownership rights should lie with a company instead of with a university. The loss is that colleges and universities are seeking to control things they never used to control. What we as a public once received unfettered, in exchange for the granting of considerable state and federal research dollars, we now may only receive with strings attached.”).

237. This is one of the distinctions between licensing a grower and selling a tree to a grower. See *Impression Prods., Inc. v. Lexmark Int'l, Inc.*, 137 S. Ct. 1523, 1529 (2017); *Adams v. Burke*, 84 U.S. 453, 456-57 (1873).

238. Milkovich, *supra* note 221 (“Pepin Heights formed a cooperative called Next Big Thing, allowing growers in several other states and Canadian provinces to join. Membership was limited, however, as the cooperative sought to regulate the ways SweetTango could be grown and marketed.”); Julia Stewart, *Building a Better Apple: Co-Op Pursues Premium Market Niche By Producing*, MARKETING NEW VARIETIES, Sept/Oct. 2015, at 16, http://sweetango.com/wp-content/uploads/2016/10/ruralcooperatives_septoct2015_nbtarticleonly-1.pdf [https://perma.cc/MQ8P-TFCM] (stating there are “44 apple growers who are members of ‘Next Big Thing, A Growers’ Cooperative’”).

239. Seabrook, *supra* note 72.

240. *Id.* (“The quality varied widely, and as consumers found they could not count on the Honeycrisp crunch every time, the brand suffered. And . . . ‘red drift’ began to set in. . . . ‘The wheel is turning again, and one day the red spots will take over and Honeycrisp will be just as flavorless as the next apple.’”).

241. *Id.*

the potential issue of Red Drift that impacted the Honeycrisp. The Next Best Thing did so in their licenses, arguably protecting the integrity of the SweeTango growing experience.²⁴² These licenses also allow the University to profit from sales of the SweeTango long after the patent expires.²⁴³ This is an example of a license that both benefits and harms the consumer.

The managed apple models are not without controversy.²⁴⁴ First, managed apples are expensive.²⁴⁵ Second, managed apples have a limited production, making such apples potentially hard to find and difficult to popularize.²⁴⁶ Third, growers may be reluctant to comply with the detailed requirements and paperwork associated with many managed apple varieties.²⁴⁷ Fourth, managed varieties emanating from public institutions have prompted additional concerns about the allocation of public resources.²⁴⁸ Finally, private ordering is new and different, causing headaches for growers unfamiliar with the concept.²⁴⁹ Farmers must adjust and realize they may not be able to grow or sell an apple variety. This is despite consumers' requests for the variety and willingness to pay more for the apples.²⁵⁰ That being said, managed varieties have found tremendous success, changing the cultivar and the model of distribution.

242. Milkovich, *supra* note 221.

243. The University of Minnesota states that "exclusive licensing was necessary to protect the quality of the SweeTango while maximizing royalties the university could earn to support future research." Karen Herzog, *SweeTango at Core of Apple War: Growers Battle Over Early Season Fruit Developed by University of Minnesota That Is Produced Under an Exclusive Licensing Agreement*, MILWAUKEE-WISCONSIN J. SENTINEL (Sept. 9, 2010), <https://archive.jsonline.com/news/wisconsin/102597659.html> [<https://perma.cc/7EJ3-GLYJ>].

244. See George Morgan, *Trademark Fight Moves to Apples*, MORGAN L. OFF. (July 11, 2012), <http://patentaz.com/1143/trademark-fight-moves-to-apples> [<https://perma.cc/DF79-QWB8>].

245. Abad-Santos, *supra* note 56.

246. *Id.*

247. Warner, *supra* note 215.

248. A group of farmers sued the University of Minnesota seeking to void the contract signed between the University and Pepin Heights. Milkovich, *supra* note 221. The contract granted Pepin Heights the "exclusive license to grow, have others grow on its behalf, and sell SweeTango." *Id.* (internal quotation marks omitted). Pepin then formed The Next Big Thing and released SweeTango as a managed apple. *Id.* The farmers sued, challenging "the idea of a publicly funded university developing a product and granting an exclusive license to one business to sell that product." *Id.* The lawsuit argued that using public funds should give the public the right to benefit from the product, and to do otherwise is illegal and unethical. *Id.* The case settled. *Id.*

249. Warner, *supra* note 215 (noting one of the biggest drawbacks to managed apples is the additional paperwork they generate: "Paperwork is a drawback. 'It's expensive,' 'It's a headache.' The cost is one of the main disadvantages.").

250. *Id.* ("On the down side, the grower has less control than with traditional varieties when it comes to deciding how many acres are planted, and the grower and variety owner might have different motivations"); David Marks, *Jazz Apple Tree*, GARDENFOCUSED, <https://www.gardenfocused.co.uk/fruitarticles/apples/vari>

Managed apples are a relatively new innovation, but the branding of apples is not. Clarence Stark came up with the name “Delicious” for an apple before even finding just the right apple to bear that appellation.²⁵¹ Protecting that brand, Clarence Stark found the Golden Delicious apple, placed physical restraints around the original Golden Delicious tree, and created a massive marketing campaign focused on the brand itself.²⁵² Today, innovators have taken protection to a whole new level through managed and club apples, promoting their brand while limiting the rights of farmers.²⁵³

The MN55 cultivar presents an interesting use of branding in the context of a managed apple. The University released this managed apple under two brands—First Kiss, reserved for Minnesota growers, and Rave,²⁵⁴ exclusively licensed to MN55 cultivar growers outside of Minne-

ety-jazz.php [<https://perma.cc/9PMV-XQVN>] (last visited Jan. 31, 2021) (“In fact the Jazz apple tree is known by another name, ‘the lawyer’s apple tree.’ Sad but that’s the truth. The promoters of the brand are so protective of the name (just the name to be clear!) that no-one dares go near it.”).

251. LEANN ZOTTA, 200 YEARS AND GROWING: THE STORY OF STARK BRO’S NURSERIES & ORCHARDS CO. (2016) (“[The apple was a] good-looking apple to be sure, but it won for its exceptional flavor. The moment Clarence bit into one, he excitedly exclaimed, ‘My! This apple is delicious!’ He paused, thought, and spoke again. ‘That will be its name! Who sent them?’ The judges overwhelming declared the strange-but-delicious apple the winner. But who had sent the apple? Chatter rose as the crowd speculated. To Clarence’s great dismay, it became clear that no one knew who had sent the prize-winning beauties—the entry card was missing. Either the grower had failed to send it, or it had been carelessly lost. A frustrating, frantic search failed to bring it to light.”); R. K. Sewell, *Page Allotment Can Make or Break Catalogue: Advertising of Stark’s Golden Delicious Apple Trees Shows How This Mathematical Principle Works*, PRINTERS’ INK MONTHLY, May 1921, <http://129.71.204.160/history/businessandindustry/goldendelicious03.html> [<https://perma.cc/KP9C-MYSF>].

252. Sewell, *supra* note 251 (“To protect the tree from vandalism and to provide a dramatic touch for the advertising that was bound to come later, the company erected a burglar-proof wire cage around the tree and hired the owner of the orchard as watchman. If any attempt is made to get at the tree an electric alarm rings in the watchman’s cottage. The tree is a cage, on account of its human-interest appeal, has been shown on moving-picture screens in thousands of theatres and has been picture[d] widely.”).

253. Managed apples and club apples are two terms often used interchangeably, but in fact, club apples are a subset of managed apples. A managed apple is a broader term referring to all apples where restrictions are placed on the apple growers and the apple is “managed” by a source. Club apples are a subset of managed apples where growers have to be part of a “club” or a particular group in order to grow these apples, and the growth of the apple is managed by the group. Pink Lady is a managed apple, while SweeTango is a club apple. Charles, *supra* note 40.

254. *More About the Fruit*, STEMLIT WORLD FAMOUS FRUIT, <https://www.stemlit.com/fruits/apples/rave-apples/> [<https://perma.cc/8VS4-4RX9>] (last visited Jan. 31, 2021); Amy Sowder, *Stemlit’s Rave Apple Kicks Off Washington’s 2019 Crop*, PMG: PRODUCT PACKER (July 31, 2019), <https://www.producemarketguide.com/article/stemilts-rave-apple-kicks-washingtons-2019-crop> [<https://perma.cc/9DHH-GG2L>].

sota.²⁵⁵ These managed apples allow the University of Minnesota to protect the in-state business while commercializing the apple more broadly overall. The brand tells consumers not only the apple variety but also where the apple is grown, providing valuable information to those looking to eat local. This is important information to many consumers.

Managed apples range from the local First Kiss to the international range of a Pink Lady apple. For instance, the Jazz apple is controlled by ENZA,²⁵⁶ which sets a worldwide production target and uses that target to determine how to license growers.²⁵⁷ By so doing, growers of Jazz have some protection against overproduction.²⁵⁸ ENZA also has a detailed marketing plan that is tied to that worldwide production target.²⁵⁹ On the other hand, every aspect of a licensed grower of a Jazz apple is controlled by ENZA,²⁶⁰ including how many acres the grower can plant, to what rootstock the grower can graft the Jazz scionwood, when the Jazz apple can be harvested, and how densely the apple trees can be planted.²⁶¹ Even deciding to no longer plant Jazz apples carries additional costs—including being forced to remove all the controlled trees.²⁶² But managed apples like the MN55 can provide a higher return for growers, therefore rendering the apple attractive despite increased growing costs.

Bargaining for innovation takes many forms—from licenses to non-disclosure agreements to private injunctions. Such bargaining may benefit

255. This is not the first apple to be so marketed. The B51 is a grower-developed descendant of the Honeycrisp apple and is marketed as the B51 in Minnesota and the SugarBee outside of Minnesota. Adam Belz, *With First Kiss, University of Minnesota Apple Growers Find Their Sweet Spot*, STAR TRIB. (Sept. 16, 2018, 9:27 AM), <https://www.startribune.com/with-first-kiss-university-of-minnesota-apple-growers-find-their-sweet-spot/493387331/> [<https://perma.cc/RM4E-88E6>].

256. The Jazz apple was first introduced in 2003 and was an early club variety. *Jazz Apple Promotion Push Set for New Year*, BLUE BOOK SERVS. (Dec. 19, 2019), <https://www.producebluebook.com/2019/12/19/jazz-apple-promotion-push-set-for-new-year/#> [<https://perma.cc/6SRA-26TC#modal>]. Jazz is a trademark for the Scifresh cultivar. T&G Global, *New Zealand Envy & JAZZ Expected to Turn Shopper Heads*, PERISHABLENEWS.COM (May 29, 2020), <https://www.perishablenews.com/produce/new-zealand-envy-jazz-expected-to-turn-shopper-heads/> [<https://perma.cc/DN5V-3N2M>]. It is currently covered by U.S. Plant Patent No. 13,888 (issued June 17, 2003), which will expire in 2021.

257. Warner, *supra* note 215.

258. The success of the Jazz apple is attributed, at least in part, to the “‘consistency and uniqueness’ of the apples’ eating experience, along with the dual hemisphere growing operations that ensure year-round availability.” *Jazz Apple Brand Undergoes Refresh*, FRESHFRUITPORTAL.COM (Feb. 9, 2017), <https://www.freshfruitportal.com/news/2017/02/09/jazz-apple-brand-undergoes-refresh/> [<https://perma.cc/S6PB-Y9JW>].

259. Warner, *supra* note 215.

260. ENZA is a club based out of New Zealand that manages the Jazz apple internationally—including in Washington, the only location Jazz apples are licensed to grow in the United States. Jazz apples are also grown in Chile and New Zealand. Charles, *supra* note 40.

261. Warner, *supra* note 215.

262. *Id.*

the parties, while also throwing up significant roadblocks to researchers, chefs, or innovators seeking to change labs, restaurants, or positions. The public's interest in accessing innovation, promoting disclosure, and lowering the barriers to entry must be considered as the shift from public ordering to private ordering takes place. Private parties are often unaware of the rights they are giving up for access to the innovations, and that represents a loss to the public as well. There are reasons to supplement public ordering, and in some industries such as comedy, private ordering is working well. In other industries, such as software, private ordering needs to be closely examined to see if the public interest is being undermined by licenses that circumvent restrictions inherent in our intellectual property system.

III. INNOVATION INCENTIVE AND INSTITUTIONAL CHOICE

The publicly ordered set of rights available to innovators within the United States is diverse, broad in scope, and protective of the public's interest. Private ordering supplements and supplants private ordering, reflecting market demand and highlighting those areas where the market is broken.²⁶³ There is a keen public interest in promoting disclosure of novel ideas, and that public interest is promulgated through public ordering; however, not all innovation is adequately protected through public ordering. Private ordering must play a significant role if innovation is to continue and the public is to benefit from those innovations. At the same time, Congress and the courts must place restrictions on private ordering's scope. A balance must be struck between frustrating public interest and favoring the freedom to contract. Without the thoughtful extension of intellectual property principles into the domain of licenses, the balance between intellectual property owner's rights and the public interest in intellectual property will shift away from the public interest.

A careful reevaluation of public and private ordering is necessary to protect the public's interest and promote innovation. Fundamental changes are required. Clarity must be codified, limitations must be litigated, and self-regulation must be restricted. It is important to question

263. See, e.g., Michael Andor Brodeur, *Copyright Bots and Classical Musicians Are Fighting Online. The Bots Are Winning*, WASH. POST (May 21, 2020, 8:00 AM), https://www.washingtonpost.com/entertainment/music/copyright-bots-and-classical-musicians-are-fighting-online-the-bots-are-winning/2020/05/20/a11e349c-98ae-11ea-89fd-28fb313d1886_story.html [<https://perma.cc/XJ94-VKTN>] (explaining classical musicians are discovering that automated copyright infringement bots are not terrific at differentiating between pieces that infringe a current copyright and lawful musical variations); Ari Herstand, *ASCAP, BMI and SESAC Force Local Coffee Shop to Shut Down Live Music*, DIGITAL MUSIC NEWS (Oct. 29, 2014), <https://www.digitalmusicnews.com/2014/10/29/ascap-bmi-sesac-force-local-coffee-shop-shut-live-music/> [permalink unavailable] (explaining how a small coffee shop hosted concerts and found that the costs of licensing the music for live concerts far outweighed the benefits to the shop). New markets are being formed by these broken aspects of the current market.

institutional choice²⁶⁴ on an art-by-art basis; in some fields, such as comedy, the adjudicative process is too expensive and too slow, while self-regulation is better suited to protect comics than other options. However, when innovators are making that choice, the public interest loses its seat at the table.

The coexistence of public and private ordering shows that neither alternative is perfect. In each art, there are advantages and disadvantages to choosing self-regulation, legislation, common law, or private ordering. At a minimum, Congress and the courts must evaluate the public's interest in a particular field of innovation, as well as an innovator's potential interest. The question of how to address a broken market where innovation and publicly ordered protection do not fit perfectly together makes the solution complicated. However, it is a question that must be addressed in a timely fashion. There are times when licenses are being used to augment intellectual property protection in the consumer's interest.²⁶⁵ On the other hand, there are times when licenses are used to prevent competitors from accessing technology after a patent term ends, taking away rights the competitors are entitled to under the law.²⁶⁶ Such a license should not be enforced.²⁶⁷ Differentiating between these scenarios is difficult and requires careful consideration of the economic realities, the imperfect institutional choices available, the norms controlling individual industries, and the interests of the innovator and the public.

Litigating and legislating public ordering will allow innovators to make a more informed choice about which institution to rely on for the protection of their innovation—public ordering or private ordering. Protection of the useful arts through patent law requires an understanding of what it means to be useful. Allowing brands to acquire trademark protection requires the courts to delineate the difference between a brand that identifies the product and one that identifies the source. Rendering a sculpture edible does not eliminate its copyright protection—artists are entitled to protection for the fixed expression of their ideas. Eliminating these ambiguities will allow the system to better protect both public interest and promote innovation.

264. See generally KOMESAR, *supra* note 16.

265. One example is the First Kiss/Rave apple brands. Consumers who choose to buy local can use that name as a shortcut for buying local. By trademarking the name and policing the trademark users, the University of Minnesota is supplementing the public ordering in a beneficial fashion for all. See *First Kiss® and Rave®*, UNIV. MINN., <https://mnhardy.umn.edu/varieties/fruit/apples/ravefirst-kiss> [<https://perma.cc/5DYV-3EQC>] (last visited Feb. 12, 2021); Belz, *supra* note 255.

266. See discussion *infra* about the MAIA-1 apple in Section III.C.1 (Patenting Brands).

267. In a different field, legislation was proposed to render licenses unenforceable that sought to extend copyright law beyond the scope envisioned by legislators. The Digital Era Copyright Enhancement Act, H.R. 3048, 105th Cong. (1997).

A. *Codifying Clarifications*

There is a strong public policy incentive in promoting innovation through public ordering. Codifying reward, however, is inherently difficult, and the effort often results in ambiguities and loopholes. The conflict arises at the intersection of protecting the public's interest and the self-interest of those involved in seeking legislative initiatives. Innovators pushing for greater reward may seek to change the laws, but in doing so may harm the public interest. Patent law provides one such example of this concern. One of the questions to be addressed in analyzing efforts to legislate innovation is what parties are driving that legislation.²⁶⁸ There are real concerns about the impact of interest groups in politics.²⁶⁹

Not all innovations are patent-eligible.²⁷⁰ Title 35, Section 101 of the U.S. Code, entitled "Inventions patentable," lists the broad categories of patent-eligible subject matter, but it does not delineate the judicially created limitations on patent eligibility. Invention itself is defined in Title 35, Section 100 as an "invention or discovery," again with no further elucidation.²⁷¹ The current diminished level of clarity as to what is patent eligible yields unpredictable results, leaving patentees, potential infringers, and investors uncertain as to whether a patent issued today will be enforceable tomorrow.²⁷² This is as true for software as it is for hybrid corn. Following the lead of the European Patent Convention (EPC) and Japan by codifying the exceptions to patent eligibility for particular inventions would help inventors understand how to best protect their inventions.²⁷³ Legislating a definition would mirror the approach taken by Japan and the EPC, allow

268. See, e.g., Geoffrey Brennan & James M. Buchanan, *Is Public Choice Immoral? The Case for the "Nobel" Lie*, 74 VA. L. REV. 179 (1988).

269. See KOMESAR, *supra* note 16, at 53–97.

270. See *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas.").

271. 35 U.S.C. § 100(a) (2018).

272. See, e.g., Walsh, *supra* note 159, at 294 n.13 ("Some firms have also begun concentrating on their most promising targets, because of the high cost of maintaining patents and the low value of many . . . patents . . . that may not give rights to downstream developments.").

273. In addition to the codified exceptions, the Japanese patent examiners have a detailed list given to them of non-statutory inventions which are not patent-eligible. These guidelines contain a detailed list of excluded inventions. Under these guidelines, the excluded categories are not a "creation of a technical idea utilizing the laws of nature" and are, therefore, not statutory inventions. JAPAN PATENT OFFICE, EXAMINATION GUIDELINES FOR PATENT AND UTILITY MODEL IN JAPAN pt. III, ch. 1, § 2.1 (2015), https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/tukujitu_kijun/document/index/all_e.pdf [<https://perma.cc/7TLJ-VD4J>]. In a similar fashion, the guidelines issued to United States patent examiners state that "claims directed to nothing more than abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible for patent protection." U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2106.04 (2018).

the United States to codify the guidelines set forth for U.S. patent examiners, and provide clarification to innovators.²⁷⁴

In choosing to turn to legislation to fix the imperfection in the market, an institutional choice is being made. A patent is a bargain whereby the public grants the inventor a limited set of rights in return for learning the intimate details of the invention. With the constantly shifting background of patent eligibility, and the substantial cost of obtaining a patent—both monetary and informational costs—many information age innovators are choosing to find other ways to protect their ideas and removing the benefit from the public granted by the patent system. The government should not be the automatic responder to imperfections in the market, however, amending Section 101 allows innovators to know whether their inventions fall within the realm of patent-eligible subject matter and maximizes economic efficiency. It is far more difficult for the benefits to outweigh the risks when the innovator is uncertain as to whether the invention is even eligible for publicly ordered protection.

B. *Litigating Legislation*

The courts play a tremendously important role in incentivizing innovation. The laws of our country must be interpreted by the judicial system. It is difficult to enter into transactions to protect innovations when the extent of the codified coverage is unknown. Courts have the authority to delineate the legal definitions and the job of clarifying the coverage of the laws. When the law states that a plant variety name cannot be trademarked, the judicial system needs to define a plant variety name to include arbitrary names as well as alphanumeric designations.²⁷⁵ The copyright

²⁷⁴ A proposed framework was set forth for a modified Section 101 by Senators Coons and Tillis and Representatives Collins, Johnson and Stivers on April 17, 2019. The framework proposed defining:

[I]n a closed list, exclusive categories of statutory subject matter which alone should not be eligible for patent protection. The sole list of exclusions might include the following categories, for example:

- Fundamental scientific principles;
- Products that exist solely and exclusively in nature;
- Pure mathematical formulas;
- Economic or commercial principles;
- Mental activities.

Press Release, Chris Coons, Sens. Coons and Tillis and Reps. Collins, Johnson and Stivers Release Section 101 Patent Reform Framework (Apr. 17, 2019), <https://www.coons.senate.gov/news/press-releases/sens-coons-and-tillis-and-reps-collins-johnson-and-stivers-release-section-101-patent-reform-framework> [<https://perma.cc/5VMZ-NPWW>].

²⁷⁵ See, e.g., Lee Reich, *Patents and Trademarks: My Plants Broke the Law*, Nw. IND. TIMES, https://www.nwitimes.com/niche/shore/home-and-garden/patents-and-trademarks-my-plants-broke-the-law/article_9e15d253-f64a-5740-8b1b-4d7fef335aed.html [<https://perma.cc/68SJ-JBGK>] (last updated Jan. 7, 2013) (“I recently learned that three birch trees I planted have broken a rule about patenting and trademarking. They are Heritage birches. The variety name under the patent is Heritage, and the plant was later trademarked Heritage. That’s a no-no: a variety and trademark name must be different.”).

code says that sculptures are protectable but does not say that they cannot be edible. To judicially legislate these protections requires no act of Congress and is in the best interest of innovators and the public. The adjudicative process is a difficult one and has more formal requirements for participation than the transactional, market-driven approach discussed in Section III.C. On the other hand, the adjudicative process has fewer formal requirements than the political approach discussed in Section III.A. The process is smaller than either individual transactions or the political process. The role of the court is to interpret the laws—not to determine how to best incentivize innovation. The dynamics of litigation and the systemic underrepresentation of the public interest limits the role that courts can play in the balancing act of protecting the public and promoting the progress of science and the useful arts. Furthermore, high-impact parties are unlikely to rely on the judicial system to resolve issues of great import in the intellectual property system. That being said, innovators may try to contract around litigation, but when the licensees disagree as to the meaning of the laws regulating the innovations being licensed, the courts must delineate the limits of the laws. Each institutional choice plays an important role in protecting the rights of the innovators and the public, and each brings with it comparative advantages and disadvantages. No one institution can substitute for any other institution. Contracts, Congress, and the courts all play a role in bargaining for innovation.

1. *Delineating Description*

Plant varieties are unique from a public policy perspective in the field of intellectual property. The plant, its progeny, and the intellectual property are often the same thing. Protecting plant varieties is challenging. Patents, plant patents, plant variety protection certificates, licenses, and trademarks are all used, and each form of protection brings with it restrictions. Plants take a long time to come to financial fruition, and developing new cultivars is an expensive and self-limiting process. Many cultivars have no financial future and finding the few that do is a time-consuming process.²⁷⁶ Patent protection and PVP certificates are temporally limited. Licenses require privity. Trademarks are valid as long as they are used in commerce, and trademark infringement does not require privity.²⁷⁷ That being said, trademarks must do more than merely describe the variety, and it is time to judicially legislate the limits of trademark protection. Courts should deny protection when the brand conveys no more information than what variety is being grown.

Traditionally, in growing new cultivars, plant varieties are given an alphanumeric designation. Market realities are such that when a new plant variety is developed, it must have a name to be a commercial suc-

276. Seabrook, *supra* note 72.

277. *See* 15 U.S.C. § 1051 (2018).

cess—not just an alphanumeric designation.²⁷⁸ As a result, many varieties are identified by both an alphanumeric designation and an arbitrary name.²⁷⁹ When the same plant is commonly known by both an arbitrary name and an alphanumeric designation, it can be challenging to understand the difference.²⁸⁰ The alphanumeric designation may be the only designation found on the patent, while the arbitrary brand may be the only designation found in the press describing the apple. The Trademark Manual of Examining Procedure (TMEP)²⁸¹ makes it clear that varietal names cannot be trademarked, since “such names do not function as source indicators.”²⁸² The TMEP advises examining attorneys to focus on whether the name sought to be registered describes a particular plant or a particular source for the plant—in other words, is the term the product or

278. When Washington State University first introduced their WA 2 apple, they did not give it an arbitrary name. The apple was subsequently relaunched and branded as “Sunrise Magic.” Washington State University expected that “[t]he name and marketing strategy [would] . . . give the apple the commercial momentum it needs to be commercially successful.” *WSU’s WA 2 Apple Will Be Re-Launched and Marketed As Sunrise Magic: Some Had Called It Crimson Delight*, GOOD FRUIT GROWER (Feb. 9, 2016), <https://www.goodfruit.com/wsus-wa-2-apple-will-be-marketed-as-sunrise-magic/> [<https://perma.cc/T2YE-UGYY>]; see also Marks, *supra* note 250 (“[T]here is no such thing as a Jazz apple tree variety, that is total hype. There is an apple tree called Scifresh, which is the true variety name, but Jazz sounds so much more . . . well, jazzy, compared to Scifresh doesn’t it? And with that in mind, you simply have to know that you are being sold a marketer’s dream with Jazz, because if they were telling it straight, they would tell you the truth, you are eating a Scifresh apple, it’s that simple.”); *Sunrise Magic Name*, PROVARMANAGEMENT, <https://provarmanagement.com/sunrise-magic/> [<https://perma.cc/AN6K-R8GC>] (last visited Jan. 31, 2021) (“Notably, in two separate consumer focus groups, the word “Sunrise” was chosen as the preferred brand name for the WA 2 apple variety for the exact same reasons. Consumers thought that Sunrise was a good fit because of the beautiful glowing color of the fruit, as well as the light, refreshing taste that made them think of having a nourishing start to their day.”).

279. See, e.g., *In re Hilltop Orchards & Nurseries, Inc.*, 206 U.S.P.Q. 1034, 1035 (T.T.A.B. 1979) (“Every type of tree or plant in the vegetable kingdom has a specified generic (Latin) name, generally known only to those scientists well versed in the botanical community, and entirely unknown to the average purchaser in the marketplace where such products are sold.”).

280. See generally S.K. Brown & K.E. Maloney, *Making Sense of New Apple Varieties, Trademarks and Clubs: Current Status*, N.Y. FRUIT Q., Fall 2009, at 9.

281. “While the TMEP does not have the force and effect of law, it sets forth the guidelines and procedures followed by the examining attorneys at the PTO.” *W. Fla. Seafood, Inc. v. Jet Rests., Inc.*, 31 F.3d 1122, 1127 n.8 (Fed. Cir. 1994).

282. *In re Pennington Seed, Inc.*, 466 F.3d 1053, 1055 (Fed. Cir. 2006); see also TMEP § 1202.12 (U.S. PATENT & TRADEMARK OFFICE Oct. 2018) (stating an application filed to register a mark for live plants requires the examining attorney to “submit a request to the Trademark Law Library to undertake an independent investigation of any evidence that would support a refusal to register, using sources of evidence that are appropriate for the particular goods specified in the application”).

the source.²⁸³ When an arbitrary name²⁸⁴ is used as an appellation for all apples that grow from a particular scionwood, not an appellation for apples grown in a particular orchard, then the arbitrary name is describing the product and not the source, thus, it cannot be trademarked.²⁸⁵

In 1942, Archibald Watkins patented a rose.²⁸⁶ The rose was not named in the plant patent, but Watkins distributed it under the name “Texas Centennial,” which he then sought to trademark.²⁸⁷ The D.C. Circuit held that to allow a nursery to trademark the brand by which the consumers had come to know a patented rose variety would be to prolong the rights of the patentee beyond the patent term, which would place competitors at an unfair disadvantage.²⁸⁸ The D.C. Circuit went on to deny registration to the name of the rose variety, finding it unfair “to require buyers who are indifferent to source, and want merely goods of certain characteristics, to name a particular source in order to name the desired characteristics.”²⁸⁹

If the only way a consumer can refer to a product is to use the varietal name, then the varietal name is merely descriptive, regardless of whether there is an alphanumeric name associated with the patent application.²⁹⁰

283. *In re Pennington Seed*, 466 F.3d at 1059.

284. TMEP § 1202.12. The TMEP recognizes that varietal names can be a “numeric or alphanumeric code” such as “MN1711” or a fancy or arbitrary name such as “Honeycrisp.”

285. 15 U.S.C. § 1127 (2018) (stating a trademark must be source-identifying).

286. *See* U.S. Plant Patent No. 162 (issued Jan. 21, 1936).

287. Walter J. Derenberg, *Trade-Marks Ante Portas*, 52 *YALE L.J.* 829, 840 (1943) (“[T]he owner of a plant patent for a new variety of rose . . . introduced the rose in commerce. He had listed it under that name in his catalogues and attributed certain physical features to this rose in order to distinguish it from other roses.”).

288. *Dixie Rose Nursery v. Coe*, 131 F.2d 446, 447 (D.C. Cir. 1942).

289. *See id.*; *see also* Derenberg, *supra* note 287, at 840.

290. Van Well and Hilltop Nurseries owned Plant Patent No. 4,839 (the ‘839 patent) entitled “Spur-Type Red Delicious Apple Tree” and trademarks on the words “Smoothee” and “Scarlet Spur.” *See* *Van Well Nursery, Inc. v. Mony Life Ins. Co.*, 421 F. Supp. 2d 1321 (E.D. Wa. 2006); U.S. Plant Patent No. 4,839 (issued Apr. 20, 1982); SCARLET SPUR, Registration No. 1,952,536; SMOOTHIEE, Registration No. 1,241,362. A suit was brought against a competitor for plant patent infringement and trademark infringement. *Van Well Nursery, Inc.*, 421 F. Supp. 2d at 1324. As in the Texas Centennial case, the plant carried no name in the ‘839 patent application. When the apple was marketed, the court found, however, that Scarlet Spur and Smoothee had “undisputedly become known to the relevant public to be names of trees descending from the respective patented cultivars rather than a brand identifier for the source of the trees.” *Id.* at 1329. No attempt was made to clarify that a Scarlet Spur apple was a Snipes cultivar from a particular orchard. A trademark must tell others who produced the product—not what the product is. If Scarlet Spur is to operate as a trademark, then a consumer seeing the “Scarlet Spur” brand, must thus know that the branded apple was the Snipes cultivar of the Red Delicious apple grown by or licensed from one particular source. If upon seeing the “Scarlet Spur” brand, the consumer knows only that this apple is the Snipes cultivar of the Red Delicious apple, then the brand is not a trademark, as it is only telling the consumer what type of apple it is, not who grew

In applying to patent the Honeycrisp apple, the cultivar sought to be patented was named “Honeycrisp.”²⁹¹ In patenting the Cosmic Crisp apple, on the other hand, the varietal name was given as “WA 38.”²⁹² The fact that Plant Patent No. 24,210 refers to the variety as WA 38, and not “Cosmic Crisp,” should not be the determining factor for the trademarkability of Cosmic Crisp.²⁹³ Archibald Watkins used no name in his patent on the Texas Centennial rose, and yet the D.C. Circuit still understood that the plant and the arbitrary name were the same.²⁹⁴ Public policy dictates that trademark law protects source-identifying information for the consumer—and not terms used merely to describe a product—whether the term describes the product in a catalog or a patent application.²⁹⁵ When the arbitrary name conveys no more information to the consumer than the alphanumeric designation, then the arbitrary name is not serving as a trademark, but rather as a description of the product, and the consumer is harmed by private ordering that restricts the use of the arbitrary name.²⁹⁶

it. A varietal designation cannot be trademarked. As a result, the names Scarlet Spur and Smoothee were found to be generic and not trademarkable. *Id.* at 1332.

291. U.S. Plant Patent No. 7,917 (issued Mar. 20, 1990); *see also* Kate Krader Bloomberg, *The Search for the Next Honeycrisp Apple*, BLOOMBERG (Jan. 2, 2019, 5:12 AM), <https://www.bloomberg.com/news/features/2018-12-14/the-search-for-the-next-honeycrisp-apple> [<https://perma.cc/N9K5-86W8>]; Dan Olson, *Honeycrisp Apple Losing Its Patent Protection, but Not Its Appeal*, MPR NEWS (Oct. 21, 2007, 4:00 AM), <https://www.mprnews.org/story/2007/10/11/honeycrisp> [<https://perma.cc/B77M-EBEW>] (“What about the name, Honeycrisp? Is it protected? University of Minnesota officials say they aren’t sure. The name is trademarked by the U of M. One view is that means growers tinkering with variations will have to pay a trademark license fee or find another name. Another view is the name is not protected and can be used by anyone, an opinion which may fuel a future legal spat.”). The University of Minnesota initially filed for a trademark on the brand Honeycrisp, otherwise known as the MN1711 varietal. The application was abandoned, as the Honeycrisp name is associated with the third-most grown variety of apple in America—not with a particular orchard.

292. U.S. Plant Patent No. 24,210 (issued Feb. 4, 2014).

293. In writing about the Cosmic Crisp, one author demonstrated the confusion by describing the variety as having changed its name from WA 38 to the Cosmic Crisp. *See* Keith Spencer, *The Cosmic Crisp Is Not the Future*, SALON (Dec. 29, 2019, 7:00 PM), <https://www.salon.com/2019/12/29/the-cosmic-crisp-apple-is-not-the-future/> [<https://perma.cc/ZT3S-KD9U>] (“The Cosmic Crisp, then known as WA 38 . . .”).

294. *Dixie Rose Nursery*, 131 F.2d at 447.

295. *See, e.g.*, *Goodyear’s Rubber Mfg. Co. v. Goodyear Rubber Co.*, 128 U.S. 598, 602 (1888) (“Names which are thus descriptive of a class of goods cannot be exclusively appropriated by any one.”); *BellSouth Corp. v. DataNational Corp.*, 60 F.3d 1565, 1569 (Fed. Cir. 1995) (noting the generic name of a product “cannot inform the public that the product has a particular source”); *In re Pennington Seed, Inc.*, 466 F.3d 1053, 1059 (Fed. Cir. 2006) (“It is well-established that an applicant cannot acquire trademark protection for the generic name of a product.”); *Weiss Noodle Co. v. Golden Cracknel & Specialty Co.*, 48 C.C.P.A. 1004 (1961) (“[N]o one can be granted the exclusive use of the name of an article . . .”).

296. *See In re Cooper*, 254 F.2d 611, 616 (C.C.P.A. 1958).

Once a consumer identifies the brand with the product (e.g., the apple), as opposed to the source (e.g., the source the nursery growing the apple), then the brand becomes merely descriptive of the product.²⁹⁷ To find otherwise, and to allow the breeder to continue to control the variety by controlling its name after the limited rights accorded to the breeder expire, is to extend those rights beyond their publicly ordered life. The consumer must have a name that the consumer can use to ask for a particular product, and that name is naturally going to be the varietal name.²⁹⁸ To restrict the use of the consumer-recognized name is to harm the bargaining process for the consumer who does not recognize the difference between a brand and a varietal name.²⁹⁹

In asking for a Coca-Cola, the consumer is asking for a product—a cola—from a particular source: Coca-Cola.³⁰⁰ On the other hand, in asking for a Honeycrisp apple at the grocery store, the consumer is asking for a product—the Honeycrisp apple—not a product from a particular breeder, orchard, or geographic location.³⁰¹ Despite this, developers of new varieties are trademarking the brands used to identify those new varieties. Allowing a brand to be used to limit consumer access to a product, not a producer, harms the public interest. It is “unfair to require buyers who are indifferent to source, and want merely goods of certain characteristics, to name a particular source in order to name the desired characteristics.”³⁰² A patent gives the developer the right to exclude others—a trademark brings with it a different set of rights. A consumer seeking to buy a Honeycrisp apple would like an apple with a particular taste, color, and genetic composition, but the consumer is unlikely to care

297. See *In re Farmer Seed & Nursery Co.*, 137 U.S.P.Q. 231, 231 (T.T.A.B. 1963) (“It has been consistently held that a term which functions as a name of the goods is inherently incapable of also serving as a trademark to distinguish said goods in commerce.”); see also *In re Cohn Bodger & Sons Co.*, 122 U.S.P.Q. 345 (T.T.A.B. 1959) (“The catalog shows clearly that . . . ‘BLUE LUSTRE’ is the varietal name designating a hybrid petunia of a specific variety and color rather than a brand-name identifying seeds sold only by applicant and distinguishing them from seeds sold by others. The varietal name is available to all who grow the variety and sell the seeds therefrom to describe the particular hybrid petunia. The term ‘BLUE LUSTRE’ is not a trademark.”).

298. *In re Hilltop Orchards & Nurseries, Inc.*, 206 U.S.P.Q. 1034, 1035 (T.T.A.B. 1979).

299. See *id.*; *Weiss Noodle Co.*, 290 F.2d at 848 (“[T]he descriptive name of a product is unregistrable regardless of acquired secondary meaning.”).

300. The Coca-Cola recipe is an example of one of the most famous trade secrets in the world. See, e.g., Robert M. M. Seto, *A Federal Judge’s View of the Most Important Changes in Patent Law in Half-A-Century*, 11 J. TECH. L. & POL’Y 141, 153 (2006).

301. See, e.g., John Ewolt, *Why are Honeycrisp Apples Still So Expensive?*, STAR TRIB. (Sept. 27, 2019, 10:35 AM), <https://www.startribune.com/why-are-honeycrisp-apples-still-so-expensive/547544271/> [https://perma.cc/TZC7-NR6V] (“[M]ore farmers planted Honeycrisp trees and expanded the supplies. Supplies have greatly expanded, nearly doubling production in just the last four years.”).

302. *Dixie Rose Nursery*, 131 F.2d at 447.

about obtaining a Honeycrisp apple that has been licensed by the University of Minnesota.

It is time to protect the public interest in knowing the difference between a product and a source. When a brand communicates information to the consumer, such as the source of the product, geographic or otherwise, or information about how the apple is grown, then the brand ought to be protectable under trademark law. The brand cannot be protected under trademark law when the brand conveys nothing more than the product identification to the consumer.

Innovators in the agribiotechnology field have effectively used brands to convey information beyond the plant variety to consumers. A consumer who wishes to buy local, for instance, may choose to purchase the First Kiss apple, a trademark used by the University of Minnesota for the MN55 varietal exclusively for apples grown in Minnesota.³⁰³ Another brand, Pink Lady, is a trademark that may be found on several varieties of apples.³⁰⁴ The International Pink Lady Alliance (IPLA) relies heavily on private ordering to ensure the limited distribution of apples labeled Pink Lady. Each grower licensed to grow Pink Lady apples must meet guidelines set forth by the owner of the mark.³⁰⁵ Pink Lady does not merely describe a particular apple variety from any source; instead, it refers to the managed apples produced by licensed Pink Lady growers.³⁰⁶ The purchaser of a Pink Lady-branded apple is purchasing an apple that meets specific standards and comes from a licensed source.³⁰⁷ Brands such as Pink Lady or Rave provide information to the consumer and are entitled to trademark protection—they do more than merely describe the product.

This is a narrow line, but one worthy of demarcation.³⁰⁸ The public must have the right to freely use language that describes a product.³⁰⁹ If

303. *University of Minnesota Introduces First Kiss Apple*, GOOD FRUIT GROWER (Aug. 8, 2018), <https://www.goodfruit.com/university-of-minnesota-introduces-first-kiss-apple/> [<https://perma.cc/PK45-ESNC>].

304. *Cripps Pink vs Pink Lady Apples*, EARL'S ORGANIC PRODUCE (Jan. 17, 2013), <https://www.earlsorganic.com/2013/01/> [<https://perma.cc/TVV4-59PJ>]; Walker, *supra* note 127.

305. *About Pink Lady Brand*, PINK LADY AM., <https://pinkladyapples.com/exporters-hub/pink-lady-taste-quality-standards/> [<https://perma.cc/9SVB-4UVP>] (last visited Jan. 21, 2021).

306. Joanna Blythman, *The Jazz Apple: A Privatisation of Nature*, GROCER, July 13, 2013, at 21.

307. *See id.*

308. *See* *Ross-Whitney Corp. v. Smith Kline & French Labs.*, 207 F.2d 190, 194–95 (9th Cir. 1953) (“When a new product or machine is patented and then marketed for the duration of patent under a particular name, if the consumer so identifies the name with the article itself, without regard to the source of its manufacture, that name may become the generic designation of the product and as such enters the public domain along with patent at the end of protected period. . . . [But,] to extent that given name is identified in the mind of consumer with the source of the product, the name may be protected.” (footnotes omitted)).

309. That being said, if a mark does convey additional information to a consumer, then even if it is an alphanumeric designation it may be registrable as a

the plant variety name, such as Honeycrisp, is the only term the consumer has to describe the exact apple the consumer wants—then the term is merely describing the characteristics of the apple the consumer seeks to buy, not describing any characteristics associated with the apple.³¹⁰ A consumer seeking to buy a Pink Lady apple may purchase a Cripps Pink apple instead, but if they choose to purchase the Pink Lady apple, they do so knowing that the Cripps Pink apple branded as a Pink Lady is grown by a licensed apple farmer under controlled growing conditions. The variety name may be arbitrary, but in the case of the Pink Lady apple, the name conveys information describing the goods being sold to the consumer.³¹¹ Experience has proven that alphanumeric marks do not enhance an apple's market presence. If a varietal name is merely descriptive, then the varietal name is already not registerable. However, the confusion currently reigning renders it imperative that it be spelled out by the courts that a mark that is merely descriptive of a plant variety is not protectable. The limitations must be judicially legislated.

trademark. *See, e.g., Ex parte Pfister Hybrid Corn Co.*, 56 U.S.P.Q. 275, 275 (Com'r Pat. & Trademarks 1943) (allowing registration of the number "5897" as a mark for seed corn).

310. *See In re Cooper*, 254 F.2d 611, 615 (C.C.P.A. 1958).

311. The Federal Seed Act sets forth numerous seed variety naming restrictions and states: "Seed shall not be advertised under a trademark or brand name in any manner that may create the impression that the trademark or brand name is a variety name." 7 U.S.C. § 201.36b(e) (2018). The guidelines issued by the United States Department of Agriculture for naming varieties of seed in compliance with the Federal Seed Act state:

- Variety names may contain trademarks, but the trademark status is lost in the sense that anyone marketing seed of that variety must use the entire variety name including the trademark.
- A trademark symbol or registered trademark symbol cannot be displayed in the variety name.
- A trademark by itself cannot be a variety name and a variety name cannot be trademarked.

Variety Naming Guidelines to Comply with the Federal Seed Act, USDA.GOV, <https://www.ams.usda.gov/rules-regulations/fsa/variety-naming> [<https://perma.cc/4LVB-FLPT>] (last visited Feb. 24, 2021).

2. *Copyrighting the Culinary Arts*

Fitting recipes and dishes into the copyright system is not a natural fit.³¹² However, food can be art—and art is copyrightable.³¹³ Recipes are a description of a process, but a description that disseminates an artist's knowledge.³¹⁴ Amending the copyright code can provide publicly ordered protection for food, but if this is done, then serious consideration must be given to inculcating this into the current restaurant culture.³¹⁵ That being said, the copyright code does not have to be amended to recognize the protectability of either recipes or edible sculptures. Judicial recognition of the copyrightability of recipes and food as art would remove any questions respecting these issues.

A copyright protects the idea, not the fixed embodiment of the idea—the fixed embodiment is merely a way of identifying what the intellectual property sought to be protected is.³¹⁶ Copyrighting a recipe protects the fixed representation of the dish consumed by those who make the recipe—not merely the list of ingredients and the process of making it.³¹⁷ All copyrighted material must be original—so there is no concern about copyright on Thomas Keller's Simple Roast Chicken impinging on

312. A recipe is a description of a process or a procedure, which the Copyright code explicitly exempts from copyright protection. 17 U.S.C. § 102(b) (2018). The Copyright Office states: "A mere listing of ingredients is not protected under copyright law." U.S. Copyright Office, *What Does Copyright Protect?*, COPYRIGHT.GOV, <https://copyright.gov/help/faq/faq-protect.html#recipe> [<https://perma.cc/DBK4-X9TM>] (last visited Jan. 31, 2021); see also U.S. COPYRIGHT OFFICE, CIRCULAR 33: WORKS NOT PROTECTED BY COPYRIGHT (2017), <https://www.copyright.gov/circs/circ33.pdf> [<https://perma.cc/NN65-QS5R>]; *Publ'ns Int'l, Ltd. v. Meredith Corp.*, 88 F.3d 473, 480 (7th Cir. 1996) ("We do not view the functional listing of ingredients as original within the meaning of the Copyright Act.").

313. See 17 U.S.C. § 102(a)(5) ("Copyright protection subsists . . . in pictorial, graphic and sculptural works . . .").

314. Despite this, the Seventh Circuit has held:

The identification of ingredients necessary for the preparation of each dish is a statement of facts. There is no expressive element in each listing; in other words, the author who wrote down the ingredients for 'Curried Turkey and Peanut Salad' was not giving literary expression to his individual creative labors. Instead, he was writing down an idea, namely, the ingredients necessary to the preparation of a particular dish.

Publ'ns Int'l Ltd., 88 F.3d at 480.

315. See, e.g., Buccafusco, *supra* note 140 ("[M]ost chefs would not prosecute their rights if they had them, if for no other reason than that the time and money required to pursue these prosecutions would distract the chefs from their work. To the extent that suits were to be filed for copyright infringement of dishes, they would likely be . . . brought by large publishing houses that own the rights to the recipes contained in cookbooks. Moreover, chefs could find themselves in trouble with their own publishers and restaurant owners if they sold the rights to the recipes to them.").

316. See, e.g., Broussard, *supra* note 198, at 704.

317. *Id.*

the ability of a home chef to roast a chicken.³¹⁸ On the other hand, Thomas Keller's signature dish, Beets and Leeks, presents true originality, and Keller ought to be able to copyright the dish and perhaps prevent a home chef from recreating it.³¹⁹ That being said, given the more than twenty different cooking techniques required to plate this dish, there are other barriers besides copyright law to the reproduction of this dish by a home chef.³²⁰ It is worth repeating that the reason for protecting the recipe is to protect the implementation of the recipe by others in a dish—not the simple words on the paper.³²¹

Unique dishes—such as Cantu's cotton candy paper—are sculptures and copyright law should be held by the courts to cover such.³²² Copyright protection has built-in limitations—the work must be original to be protected—so replicating a trend would not render the food eligible for copyright protection. Furthermore, if another's work was independently created, then even if it is identical, the creator has not committed copyright infringement.³²³ And again, if the edible work is inspired by—but sufficiently different from—the copyrighted work, there is no infringement. For instance, if a chef copyrights a cigar sculpture made from sushi, and a different chef creates an edible sculpture made from roast pork, it will be challenging to argue that copyright infringement has occurred.³²⁴

Judicially legislating copyright protection for edible works of art would provide stronger protection for those engaged in the culinary arts

318. See Thomas Keller, *My Favorite Simple Roast Chicken*, BOUCHON (Oct. 2004), <https://www.epicurious.com/recipes/food/views/my-favorite-simple-roast-chicken-231348> [<https://perma.cc/NJD4-LQQ4>].

319. The ingredients for Beets and Leeks are not unusual or complicated—including beets, leeks, eggs, and salt—it is the twenty cooking styles, the presentation, and the experience that render this experience original and protectable. Paolo Lucchesi, *Deconstructing One Signature French Laundry Dish: Dozens of Steps Required to Make One Signature Dish*, S.F. GATE (June 25, 2015, 4:36 PM), <https://www.sfgate.com/food/article/Deconstructing-one-signature-French-Laundry-dish-5535590.php> [<https://perma.cc/CDN5-UFZX>].

320. *Id.*

321. See, e.g., Buccafusco, *supra* note 140, at 1135 (“The dishes that chefs create express various ideas and emotions taken from both the purely culinary world and the chefs’ wider experiences.”).

322. See generally Lauren Matthews, *Trend Spotted: 7 Hors D'Oeuvres That Look Like Cigars*, BIZBASH (July 16, 2012), <https://www.bizbash.com/catering/media-gallery/13479180/trend-spotted-7-hors-doeuvres-that-look-like-cigars> [<https://perma.cc/5QLB-JDSN>].

323. *Skidmore as Tr. for Randy Craig Wolfe Tr. v. Led Zeppelin*, 952 F.3d 1051, 1064 (9th Cir. 2020) (“[I]ndependent creation is a complete defense to copyright infringement.”).

324. In one dispute over a recipe for a chicken salad sandwich, the Eastern District of Ohio pointed out differences between the two recipes such as the use of “mozzarella cheese instead of provolone” to “demonstrate[] that the food items served by defendants are *different* from those offered by plaintiffs. Certainly, plaintiffs cannot be suggesting that somehow the copyright prevents defendants from serving chicken salad sandwiches.” *Tomaydo-Tomahhdo, LLC v. Vozary*, 113 U.S.P.Q.2d 1695, 1698 (E.D. Ohio 2015).

and decrease the need for reliance on private ordering. There are many areas of innovation where public ordering is a poor fit for the promotion of progress. The public's interest in mandatory disclosure is often outweighed by the innovator's interest in protecting their innovation in an uncertain area or maximizing the return on their investment in research and development. When public ordering is not designed to protect the innovation in question, enhancement of protection is needed. That enhancement, at least in the culinary arts, can come straight from the courts. A sculpture, edible or not, is entitled to protection under the current copyright laws.

C. *Limiting Licenses*

Innovators are increasingly using contracts to undermine the public interest inherent in the limitations placed on public ordering.³²⁵ Licenses are a tremendously powerful form of protection, incentivizing innovation in fields not well protected by public ordering, and serving a parallel function to the political process discussed above. But, when private ordering supplants public ordering and circumvents the statutory limitations, it violates public policy. Private ordering may be grafted onto public ordering to augment protection or to circumvent the public's interest. Courts should enforce licenses when (1) the terms are bargained for, (2) the terms are not unexpected, and (3) the terms augment—but do not circumvent—public legislation. Contracts are an alternative to government action, and when they promote efficiency, stability, continuity, and the public good by allowing parties to make promises that have legal effects, they should be enforced.

At the same time, contracts may be used to raise barriers to entry, to enforce private norms, to protect confidentiality, to enhance bargaining power, or to strip parties' fundamental rights.³²⁶ Taken as a whole, these transactions have a tremendously differing impact. Driven by the market process, many licenses are entered into because public legislation does not adequately protect intellectual property owners' rights, while other licenses strip away the rights of those with less bargaining power. When the market fails, it fails because it is imperfect, not because the market-driven outcomes are the wrong choice. There are times when the market successfully drives and promotes the public interest and still protects the public interest. That is not always the case, though.

325. See, e.g., Winston, *supra* note 15.

326. See, e.g., Kyle K. Courtney, *Libraries Do Not Need Permission to Lend Books: Fair Use, First Sale, and the Fallacy of the Licensing Culture*, KYLECOURTNEY.COM (May 18, 2020), <https://kylecourtney.com/2020/05/18/libraries-do-not-need-permission-fair-use-first-sale-and-the-fallacy-of-permission-culture/> [https://perma.cc/WTR7-PLY4] (“[L]icenses are eroding away our ownership rights over purchased materials, and also eviscerating the critical copyright exceptions and rights that every user, not just libraries, have under copyright.”).

The use of licenses to augment public ordering fits the traditional norms driving contract law. Such licenses are economically efficient, allowing parties to negotiate what restrictions they wish to place on downstream use and set the potential outcomes for breach, decreasing the overall transaction costs in light of the possibility of a future breach. The parties can thus use the bargaining process to incentivize innovation. The transactional cost to society when licenses circumvent public ordering and place downstream restrictions on the innovations cannot be measured. In those scenarios, the market process is not a beneficial institutional choice, and the centralizing authority of the court must be brought into play to limit such licenses. Whether those restrictions involve tying trademark rights to patent licenses or placing onerous non-disclosure burdens on those without bargaining power, such restrictions do not support the traditional norms of contract law and cannot be enforced. Undermining the bargaining process is not economically efficient and betrays the fundamental purpose of private ordering.

1. *Patenting Brands*

A patent is a bargain between the public and the innovator. The innovator receives a right to exclude others from using the innovation for a limited time, and in return, the public gains full access to the innovation after the patent expires. The temporal limitations of patent protection and the extensive research and development time necessary to produce a successful agrobiotechnological innovation have proven a poor fit for incentivizing innovation in the eyes of many breeders.³²⁷ Therefore, innovators are increasingly branding their innovations and tying the trademark license to the patent license through contracts.

In the apple orchard, for instance, the MAIA-1 cultivar, also known as the EverCrisp apple, was patented in 2014, having been in development since 1998.³²⁸ The introduction of the cultivar to consumers has been a slow process.³²⁹ Nurseries wishing to grow the EverCrisp apple must join the Midwest Apple Improvement Association (MAIA) and are then given

327. See, e.g., Nevin Martell, *Sweet. Tart. Crunchy: How to Engineer a Better Apple*, NPR: THE SALT (Oct. 9, 2013, 1:11 PM), <https://www.npr.org/sections/thesalt/2013/10/08/230552146/sweet-tart-crunchy-how-to-engineer-a-better-apple> [<https://perma.cc/HGF9-4LR7>] (“It took her most of her professional career to develop these two fruits. Ruby Frost was a 17-year process, while the SnapDragon required 12 years. That may sound like a long time, but it’s fairly standard—even a little fast—in the world of apple breeding.”); Parks, *supra* note 235 (“It takes 20,000 seeds and young seedlings to find one variety we release to the public . . .”).

328. U.S. Plant Patent No. 24,579 (issued July 1, 2014).

329. Leslie Mertz, *EverCrisp Ramps Up: Midwest Apple Improvement Association Marketing Its First New Apple*, GOOD FRUIT GROWER (June 13, 2018), <https://www.goodfruit.com/evercrisp-release-ramps-up/> [<https://perma.cc/3JE6-2FK4>]. On March 15, 2012, MAIA applied for a trademark on the mark EverCrisp. The trademark registration states that the mark was first used in commerce on April 15, 2015. See EVERCRISP, Registration No. 4,777,474.

the option to license the trees from MAIA. Because the trees are licensed from MAIA and not purchased, the trees remain (at all times) the property of MAIA—as do any improvements, developments, sports, or mutations of the trees.³³⁰ Nurseries agreeing to the terms of the license acknowledge that they will distribute the apples grown on the licensed trees by “using only the [specified] Trademarks and Logos . . . Use of other names and marks . . . is expressly prohibited and will constitute a material breach of this Agreement.”³³¹ A royalty fee of \$1 per tree is charged at the time of purchase.³³² For the duration of the plant patent, which does not expire until 2032, all patented plants can only be grown with a license from MAIA, giving MAIA this period of exclusivity to develop its brand in the eyes of the consumer. When the patent term expires, there will be no noticeable difference to consumers, as MAIA will still manage all EverCrisp trees. There is no concept of a set of rights for a limited time in this arrangement. Private ordering has grafted contract limitations onto public ordering to circumvent the temporal limitations of patent protection.

Using a patent term to build the public trust in the trademark during the patent’s duration allows the trademark owner to use the power of the right to exclude to create an unlimited right to exclude others from using the innovation. Trademark law and patent law protect different interests, and when public ordering works well, they coexist to promote the public’s interest. However, when a brand is covered by a trademark, a patent and a license that ties the patent license to a trademark license and takes a royalty beyond the patent term denies the public the benefit of the innovation—despite having given the innovator the full reward reaped through a patent.³³³

Such private ordering is against the public’s interest, violates public policy, and is not enforceable. The bargain struck between the trademark owner and the public is a different bargain than that struck between the patentee and the public. Trademarks serve to protect the public and provide a shortcut for the public to identify the source of a good. Allowing a trademark to limit the public’s access to a product covered by an expired patent, renders the trademark an innovator-identifier, not a source-identifier. The use of trademarks to extend the protection granted to plants harms the public’s interest. Patent rights are granted for a limited time, and circumvention of that grant through private ordering renders mute that limitation.

330. *License Agreement Between MAIA and Tree Purchasers*, MIDWEST APPLE IMPROVEMENT ASS’N, <http://maiaapples.com/wp-content/uploads/2020/12/2021-Continuous-License-Agreement-For-Growers.pdf> [https://perma.cc/3F3Q-TR7A] (last visited Jan. 31, 2021).

331. *Id.*

332. *Id.*

333. This is a problem. *See, e.g., Kellogg Co. v. Nat’l Biscuit Co.*, 305 U.S. 111, 119–20 (1938); *Singer Mfg. Co. v. June Mfg. Co.*, 163 U.S. 169, 185 (1896).

In 1896, the Supreme Court decided that the “Singer” brand could not serve as a trademark.³³⁴ Singer built, patented, and marketed the first practical sewing machines.³³⁵ After the relevant patents expired, Singer brought an action against June Manufacturing for trademark infringement.³³⁶ In the opinion of the court, there was a “strong implication” that the use of the mark Singer on the patented sewing machine after the term of the patent had expired was done “in order . . . to retain in the possession of the company the real fruits of the monopoly when that monopoly had passed away.”³³⁷ The Supreme Court held that the public has the right to use the knowledge contained within a patent upon the expiration of the patent term, and, implicit in that right, is the right to use the name with which the article has become known during the patent.³³⁸

To say otherwise would be to hold that, although the public had acquired the device covered by the patent, yet the owner of the patent or the manufacturer of the patented thing had retained the designated name which was essentially necessary to vest the public with the full enjoyment of that which had become theirs by the disappearance of the monopoly.³³⁹

In 1938, the Supreme Court was faced with the question of whether the National Biscuit Company had the exclusive right to use the trade name “Shredded Wheat.”³⁴⁰ The shredded wheat biscuit was invented by Henry Perky, introduced to the public as shredded wheat in 1893, and patented in 1895.³⁴¹ In 1938, the breakfast cereal had been known exclusively as shredded wheat for almost half a century, long after the end of the patent term.³⁴² The Supreme Court found that the expiration of the patent dedicated to the public, “not only the right to make the article as it was made during the patent period, but also the right to apply thereto the name by which it had become known,” and National Biscuit Company had no exclusive right to the trade name “Shredded Wheat.”³⁴³

The apple is no different. It is wrong for innovators to use a patent’s term to develop secondary meaning in a trademark, thus, extending the holder’s rights.³⁴⁴ Courts must guarantee a patent term’s expiration then

334. *Singer*, 163 U.S. at 185.

335. *Id.* at 178.

336. *Id.* at 169 (explaining June marked its sewing machines as “Improved Singer” machines).

337. *Id.* at 181.

338. *Id.* at 185.

339. *Id.*

340. *Kellogg Co. v. Nat’l Biscuit Co.*, 305 U.S. 111, 113 (1938).

341. *Id.* at 111–13.

342. *Id.* at 112.

343. *Id.* at 113.

344. *See Amiesite Asphalt Co. of Am. v. Interstate Amiesite Co.*, 72 F.2d 946, 948 (3d Cir. 1934) (“Patent monopoly and trade-name monopoly started and ended together.”).

dedicates the patented article to the public. To hold otherwise is to upset the fundamental balance inherent in our intellectual property system. It is elemental in the law of trademarks that a generic term cannot be protected.³⁴⁵ If a plant variety has no known appellation other than the arbitrary mark given to it by its developer, and the connection between that mark and the variety is developed during the protection for the intellectual property contained within the variety, then the appellation has become generic for the variety in question. To find otherwise is to inhibit free speech and to extend the patent term far beyond the limited reward granted thereby. When the National Biscuit Company claimed the exclusive right to sell “Shredded Wheat” simply by the possession of the trade name, the Supreme Court rightly held they could not so extend the patent term.³⁴⁶

Trademark law protects only the brand and the goodwill associated with the brand, not the intellectual property associated with the seed itself. If the only information conveyed to the consumer by the brand is what the product is, and not what the source of the product is, then the brand is not a trademark. When the plant, its progeny, and the product are all identical, this creates significant issues with trademarking and branding plants. As a result, varietal names, even if arbitrary in their branding, often describe a product to the consumer and not a source.³⁴⁷ The use of private ordering to restrict the use of a merely descriptive brand by growers cannot be enforced. If the product is patented, then for the duration of the patent, the patentee has the right to exclude others from making, using, or selling the patented product without permission. As discussed, breeders rely on patent rights to accustom the consumer and growers to refer to a variety by name, rather than referring to the source of the name. If this happens during the patent term, the brand may have become generic. The patent does not exist to protect the brand, only the innovation itself. If the name is associated with the source only because of the limitations of the licensing, then public policy dictates that the breeder cannot restrict others’ use of the name once the breeder’s limited right to exclude others has expired.³⁴⁸

345. See, e.g., *Park’N’Fly, Inc. v. Dollar Park & Fly, Inc.*, 718 F.2d 327, 329 (9th Cir. 1983).

346. *Kellogg Co.*, 305 U.S. at 115.

347. *In re Farmer Seed & Nursery Co.*, 137 U.S.P.Q. 231, 232 (T.T.A.B. 1963) (“Manifestly, any rights which applicant enjoys in the [arbitrary variety name of the] plant derives from its patent since others are prohibited from growing and selling this variety during the life of said patent. To grant applicant a registration of this designation with all the statutory presumptions accruing therefrom would be inconsistent with the right which others will have upon the expiration of the patent not only to grow and sell the plant but also to use [the arbitrary name in question] as the varietal name thereof.”).

348. *In re Cooper*, 254 F.2d 611, 612 (C.C.P.A. 1958) (“[T]he book contains a single story, the name of the story is TEENY-BIG, the title of the book is TEENY-BIG and the book has no other name, title, subtitle or any other designation except its generic name ‘book.’”).

In tying a trademark to a patent, the apple breeder retains exclusive rights to the mark only so long as the patent remains valid.³⁴⁹ If patent protection does not provide the protection needed to promote innovation in the apple orchards, then innovators can rely solely on trademark protection.³⁵⁰ Many apples are not the subject of multiple forms of intellectual property protection. Allowing trademark licenses on such apples violates no public policy. Using trademark licenses to augment and circumvent the patent system, however, vitiates the limited right to exclude others. A brand cannot be patented, and the patent laws do not exist to protect a brand. The use of licenses to circumvent public legislation frustrates the balance inherent in that legislation and harms the public interest.³⁵¹

The Switzer brothers made and sold fluorescent paint under the registered trademark “Day-Glo.” The method of making the paint was patented.³⁵² The Switzer brothers widely licensed the patent and required all licensees to license the trademark as well.³⁵³ The patent license expressly conditioned the agreement on the trademark license, and anyone who wished to license the patent had to license the trademark as well.³⁵⁴ The arrangement had an adverse effect on competition, and there were no efficiency justifications for such an arrangement.³⁵⁵ The patent and the trademark are two separate items, regulated by two separate bodies of law, even if applied to the same physical product. Tying the trademark to the patent was held to be anticompetitive by the Seventh Circuit.³⁵⁶ In the modern fruit orchard, where an apple may be the subject of a patent and bear a trademarked brand, licensors must be careful not to tie the brand to the patent license, nor condition the patent license upon the accept-

349. See *Kellogg Co.*, 305 U.S. at 118.

350. *Id.*

351. See Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1251 (1995).

352. U.S. Patent No. 2,475,529 (issued July 5, 1949).

353. *Switzer Bros., Inc. v. Locklin*, 297 F.2d 39, 41–42 (7th Cir. 1961) (“Under contracts with Sherwin-Williams Company and other manufacturers of pigments, papers and inks, Switzer licensed each manufacturer to use the Switzer patents upon consideration of the manufacturers’ agreements that they would market all fluorescent materials manufactured by them under the Day-Glo mark and would sell such materials only to Switzer licensed dealers and end-use device manufacturers. The manufacturers were authorized, with Switzer’s approval, to enter into licensing agreements with dealers and end-users.”).

354. *Id.* at 43–44 (“The basic licenses used by [the Switzer brothers] tie the right to the use of patents to the use of the Day-Glo trademark. . . . The patent licenses were conditioned upon the use of the Day-Glo mark.”).

355. *Id.*

356. *Id.* at 41–42.

ance of the trademark.³⁵⁷ To do so may have the effect of lessening competition in the industry and place undue restraints on trade.³⁵⁸

Limiting such licenses is necessary. Language tying trademark licenses to patented agrobiotechnology innovations is becoming increasingly common. Granted, tying is presumed unlawful only when the party engaged in the tying practice has market power.³⁵⁹ Furthermore, a patent does not bring with it a presumption of market power, and a grower can indeed choose to not grow a patented agricultural product if that grower does not wish to.³⁶⁰ That being said, contracts that tie a trademark license to a patent license cannot be enforced as they vest the brands with an artificial value over and above the goodwill normally imbued in a brand.³⁶¹ If there is market demand for the use of a brand, licensees must

357. For instance, Brandt's Fruit Trees, Inc. grants growers non-exclusive licenses under Plant Patent 24,408 (the '408 Patent) to grow the PremP109 pear. The PremP109 pear is marketed under the trademark "Reddy Robin." Growers who license the PremP109 pear from Brandt agree "to market and sell the Licensed Pears only in the Direct Market Grower segment that includes local farmer's markets in Grower's community, subject to the requirement that Grower must use the REDDY ROBIN™ trademarks with all Licensed Pears that are produced by Grower that meet a minimum of U.S. Fancy grade standards." A two-part royalty is then set forth in this contract—a one-time tree royalty for the license to the scionwood, and a recurring fruit production royalty fee. The failure to comply with this requirement is contractually described as infringement. This contract is not atypical—containing language very similar to contracts promulgated by MAIA and Washington State for their patented apples. In order to license the patented technology inherent in the PremP109 pear, the grower must also agree to license the trademark, whether the grower would prefer to label the PremP109 pears with the Reddy Robin brand or not. PROPRIETARY VARIETY MGMT., LLC, REDDY ROBIN™ BRAND U.S. PLANT PATENT AND TRADEMARK LICENSE, <https://provarmanagement.com/wp-content/uploads/2019/02/ReddyRobin-Farmgate-Contract.pdf> [<https://perma.cc/AHU7-QLKJ>] (last visited Jan. 31, 2021); *see also* WASH. STATE UNIV., FARMGATE ADDENDUM TO NON-EXCLUSIVE GROWER AGREEMENT, <https://provarmanagement.com/wp-content/uploads/2019/02/WA38-farmgate-contract.pdf> [<https://perma.cc/T8R2-ZZA5>] (last visited Jan. 31, 2021).

358. 15 U.S.C. § 1 (2018); *see also* Jack Winter, Inc. v. Koratron Co., Inc., 375 F. Supp. 1, 62 (N.D. Cal. 1974) ("Koratron's licensing practice of requiring its licensed textile mills and manufacturers of accessories to sell Koratron-labeled products only to its licensed garment makers also constitutes a tying arrangement. In this instance, the tying product is the Koratron trademark and the tied product is its patented process. A textile mill wishing to utilize Koratron's trademark had to agree to sell Koratron-labeled fabrics only to Koratron's licensed garment makers. Pressure would thus be applied to garment makers inducing them to become or remain . . . patent licensees." (footnote omitted)).

359. Ill. Tool Works Inc. v. Indep. Ink, Inc., 547 U.S. 28, 44 (2006).

360. *Id.* Typically, tying is thought of when dealing with patented and unpatented products—however, tying can also occur when the grant of a patent license is conditioned upon the licensee accepting the trademark, as is the case here. *See Switzer Bros., Inc.*, 297 F.2d at 44.

361. Washington State University includes the following language in the Cosmic Crisp license agreement:

Grower may only use the Trademark for whole fruit grown from Licensed Trees that are U.S. Fancy grade or better and that otherwise meet required quality standards for the brand. The license may be terminated in

not be pressured into licensing the patent as well. The rights associated with a patent and a brand are fundamentally different. A patent grants a right for a limited time, and the use of private ordering to circumvent that limitation frustrates the bargain inherent in the grant of a patent.³⁶²

Contracts have changed the very definitions of consumption and competition. Private ordering, when limited in its scope and application, can successfully balance the costs of the reward with the costs of the innovation. But the use of private ordering to replace public ordering increases the costs of protection while decreasing the benefit to society. Using private ordering to exclude others to restrain trade, elevate already-heightened barriers to entry, restrict output, and limit competitors' research and development does not promote consumer welfare.

2. *Carving Up the Culinary Arts*

As noted above, chefs rely mainly on self-regulation to promote innovation.³⁶³ That, along with the poor fit of copyright law and the culinary arts, has led to gaps in the formal protection of the culinary arts.³⁶⁴ Restaurants and their investors have leapt into this gap and are relying heavily on private ordering to control chefs, the recipes, and the trade secrets that are essential to the culinary arts.³⁶⁵ Such private ordering must be monitored to ensure that there is a bargained-for exchange, with particular attention being paid to the sous-chefs and employees who lack bargaining power.³⁶⁶ The truth is, public ordering protects the public, while private ordering protects the successful.

the event of any conduct by Grower that would create material risks to Washington State University's Trademark rights. Any fruit grown on the Licensed Trees that does not meet the grade and quality standards may only be used, consumed, or sold for processing. Grower must positively support and promote COSMIC CRISP™ Brand as a trademark, and not as a varietal name, and must always use the Trademark as in one of the following examples:

COSMIC CRISP™ Brand
 COSMIC CRISP™ Brand WA 38 cv.
 COSMIC CRISP™ Brand WA 38 variety

WASH. STATE UNIV., *supra* note 357.

362. In the 1940s and 1950s, Switzer Brothers, the owner of several patents relating to the manufacture of daylight fluorescent devices and the trademark "Day-Glo," extensively licensed their patented technology and required all licensees to mark all products with the "Day-Glo" brand. *Switzer Bros., Inc.*, 297 F.2d at 41. The Seventh Circuit found that Switzer had tied the "right to the use of patents to the use of the Day-Glo trademark, and both to the exclusive use of Switzer produced, or Switzer approved materials. The combination thereof is, per se, a violation of the antitrust laws . . ." *Id.* at 43–44 (citations omitted).

363. See Wells, *supra* note 182 ("[Chef] Grant Achatz . . . is against a copyright system for food. 'Chefs won't use it,' Achatz says. 'Can you imagine Thomas Keller calling me and saying, 'Grant, I need to license your Black Truffle Explosion so I can put that on my menu?'"").

364. See *supra* Section II.C.

365. *Id.*

366. See Wells, *supra* note 182.

Restaurants rely on private ordering to ensure that if there are creative differences with the chef, the restaurant can retain the signature dishes created by the chef for the restaurant.³⁶⁷ What would Serendipity be, for instance, without frozen hot chocolate?³⁶⁸ This language may be part of a non-compete—like the one addressed in the Jimmy John’s discussion above—it may be part of the initial contract—like that signed by Chef Leonti— or it may be its own contract. Rather than augmenting the industry norms and complementing public ordering, such private ordering circumvents and violates these forms of protection. Allocating ownership of the recipe to the restaurant renders chefs less artists and more mechanics. The question of ownership of innovation shifts and changes through this private ordering, placing the public’s interest at risk.

If a dish is not original enough to warrant copyright protection, not innovative enough to be patentable, and yet, generates market demand, why should that market be controlled through non-compete agreements for which the chefs are not bargaining? If a restaurant claims ownership in a dish, and industry standards suggest one chef should share recipe details with another chef, that chef must choose between violating their contract with the restaurant or violating the social norms of the kitchen. Limiting enforcement of such licenses will only enhance the protections offered to all parties.

CONCLUSION

When private ordering and public ordering work together to promote innovation while protecting the public interest, then the private ordering should be enforced. In contrast, using private ordering to take advantage of the incentives offered by public ordering while circumventing its inherent limitations violates the fundamental bargain essential to public ordering. Public ordering presents a balance between the public’s interest in accessing the invention and the private party’s interest in protecting their investment. Protecting that investment incentivizes both innovation and disclosure.

Private ordering favors the successful. Public ordering helps level the playing field. A successful innovator who possesses a desired item is far better able to negotiate terms regarding access to that item than an innovator who is new to the field. Strong statutory protection should, ideally, enhance the bargaining position of the innovator and favor the public regardless of that innovator’s previous success.

367. See, e.g., Becky Krystal, *A Celebrated Chef Just Left His Restaurant. So Who Gets To Keep His Recipes?*, WASH. POST (Aug. 25, 2016, 9:00 AM), <https://www.washingtonpost.com/news/going-out-guide/wp/2016/08/25/a-celebrated-chef-just-left-his-restaurant-so-who-gets-to-keep-his-recipes/> [https://perma.cc/7PSE-P22P].

368. Stephen Bruce, *Frozen Hot Chocolate: Serendipity’s Best-Kept Secret*, EPICURI- OUS (2004), <https://www.epicurious.com/recipes/food/views/frozen-hot-chocolate-serendipitys-best-kept-secret-109560> [https://perma.cc/59JY-MN7C].

Intellectual property innovators use contracts to impose numerous additional limitations on those to whom the innovation is transferred without the accompanying title. Such contracts not only restrict the rights of licensees but also extend the intellectual property owner's rights in potentially lucrative ways. Intellectual property owners include such clauses when the value of the expression of the protected idea exceeds the reward promised by public legislation. The balance continues to be skewed in favor of intellectual property owners and against potential licensees, hindering progress and frustrating the purposes of both private and public legislation.

The traditional publicly ordered norms of intellectual property do not adequately protect and promote innovation in all areas. Innovators are turning to private ordering to protect their progress and promote their bottom line. When intellectual property owners use private ordering to supplement their intellectual property rights, then the system may be working. Increasingly, however, private ordering is being used to circumvent publicly legislated restrictions and bypass public ordering altogether. Protecting intellectual property owners' rights to contract must be balanced with protecting the public's interest in the promotion of science and the useful arts. Public ordering is not a perfect fit for all innovation; but if legislative protection has determined that the public interest is best met by not providing intellectual property protection in a field, then private ordering is against public policy and should not be enforced.

Private ordering cannot create a private monopoly over intellectual property.³⁶⁹ Bargaining for innovation requires (1) limiting licenses to those that do not run counter to the public's interest, (2) litigating limitations to clarify the protections of trademark and copyright law, and (3) codifying changes that enhance the rights of the public and innovators both. Public ordering shifts and changes in the scope of its protection, rendering it ever more challenging to determine what falls under the scope of patentable subject matter, limiting the extent of copyright infringement,³⁷⁰ and eroding trademark protection.³⁷¹ Contracting around public ordering plays a role in incentivizing innovation, however, that role must be limited by the central authority of the courts. There is no question that in some arts the market is broken.³⁷² Software, print media, the culinary arts, and comedy are all industries, like the agriculture field,

369. *Millinery Creators' Guild v. FTC*, 109 F.2d 175, 177 (2d Cir. 1940), *aff'd*, 312 U.S. 469 (1941).

370. *See, e.g., Kirtsaeng v. John Wiley & Sons, Inc.*, 568 U.S. 519 (2013).

371. *See generally Christian Louboutin S.A. v. Yves Saint Laurent Am. Holding, Inc.*, 696 F.3d 206 (2d Cir. 2012).

372. For instance, in the academic textbook market, students, unwilling or unable to pay the high costs of textbooks, can access caches of online textbooks and books commonly assigned as required reading, known as "pirate libraries." Grace Elletson, *Pirate Libraries' Find a Market Among Students Seeking to Avoid High Textbook Prices*, CHRON. HIGHER EDUC. (Oct. 13, 2019), <https://www.chronicle.com/article/Pirate-Libraries-Find-a/247304> [<https://perma.cc/L48Y-U7PG>].

where innovation and public ordering are a poor fit. In each of these industries, there is market demand and innovation; but the question remains how best to protect and promote the progress of science and the useful arts.