

Distinguishing Different Kinds of Property in Patents and Copyrights

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Introduction

Intellectual property (“IP”) is controversial. It has not always been so. The pendulum of popular opinion has swung dramatically back and forth ever since early versions of it emerged in fourteenth-century Europe. Much of the controversy stems from misunderstandings about what is being protected or asserted and, especially, what (if anything) constitutes the “property” part of intellectual property. At the same time, the four areas of legal rights generally held to constitute IP—trade secrets, patents, copyrights, and trademarks—may not have a unifying theme other than as intangibles to which property-type rights apply.

Taking a fresh look at the origins of patents and copyrights shows that the most pressing relevant problem in early modern Europe was encouraging innovators to use or disclose their creations in public. Contrary to long-established conventional wisdom, it was *not* to incentivize the authorship or invention of new things. Such creation had been taking place, often quite prodigiously, throughout human history. This is evident from a cursory look at histories of art, science, and technology, or, even better, from a stroll through the Louvre, the British Museum, or the Metropolitan Museum. Granted, some of the creation-incentive accounts are more nuanced, arguing that certain kinds of production were being incited, or that more innovation and creation occurred under formal patent and copyright regimes. Nonetheless, the overwhelming weight of the historical evidence is against such theories. The dangers of this conventional

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account have become so plain now that many modern IP scholars quite reasonably use it as an argument against IP itself, or at least against strong forms of IP. According to these scholars, all one must do is engage in empirical research to find out exactly what levels of protection or rights will incentivize authors and inventors to create or invent, and then craft positive law to grant no more than those levels. But incentivization was not the problem that patent and copyright systems emerged to solve. Ignoring the actual problem means that the solutions that arose over centuries get diminished or even eliminated, resulting in the reemergence of that problem.

From at least Greco-Roman antiquity, an important divide was acknowledged between the private and public spheres. An intentional act of *publicare* was required to transfer something from the private to the public.¹ Private statements and acts were given more leeway and carried less potential liability.² By contrast, public statements or acts could lead to severe liability, such as death for allegedly claiming one was the king of the Jews under Roman rule. However, recanting was almost always sufficient for a pardon. In fact, one could often continue holding the problematic views so long as the views were kept private and not held out publicly. Likewise, an individual could exploit private property and methods privately, with legal recourse such as *actio servi corrupti* available against others who sought to gain access to, or use, one's private knowledge or property by hiring away or bribing one's servants.³

The first kind of property posited in this Article, then, includes de jure or de facto rights to maintain secrecy and exclusivity of private knowledge and skills. Such rights came into focus as principalities and the guilds within their borders battled for control of the explosion in new knowledge

¹ The roots of *publish* and *publication* both arise from the Latin *publicare* and *publicatio*, “to make public property, to place at the disposal of the community, to make public, to make generally known, to exhibit publicly, to publish a book, to confiscate.” *Publish*, OXFORD ENGLISH DICTIONARY, <https://perma.cc/5RGH-F6ZG>; see also MICHIEL DE VAAN, ETYMOLOGICAL DICTIONARY OF LATIN AND THE OTHER ITALIC LANGUAGES 495 (2008). While the “make public property,” “confiscate,” and “place at the disposal of the community” senses provide roots for those who emphasize the goal of enhancing the public domain for copyright, the picture is complicated—especially in the transition from classical Latin to Medieval Latin and ultimately to early modern European language usage. Equally important, the terms long precede the printing press and thus are not merely an artifact of the rise of a publishing “industry.” From my perspective, the unifying theme in the *publicare* and *publicatio* Latin roots is the “make public” sense of revealing or transferring something from the realm of our private lives to the public or civic realm. De Vaan links *publicare* back to *pubes*, “adult population, company; puberty; private parts.” *Id.* For him, *publicare* only has the senses of “to make public property, exhibit.” *Id.*

² See *infra* Part I.

³ See A. Arthur Schiller, *Trade Secrets and the Roman Law; The Actio Servi Corrupti*, 30 COLUM. L. REV. 837, 839 (1930). But see Alan Watson, *Trade Secrets and Roman Law: The Myth Exploded*, 11 TUL. EUR. & CIV. L.F. 19, 19 (1996).

and innovation in early modern Europe. The guilds, often under positive law and regulations, kept technical knowledge and skills tightly within a private realm that could frustrate government's need for broad economic development as well as for the newest methods and artifacts for building, warfare, and public works.⁴ As a powerful and innovative solution that presaged the second kind of property considered in this Article, states such as the Venetian Republic began granting formal exclusive rights in exchange for some negotiated level of public use or disclosure of desired knowledge or skills.⁵ But the very existence of these incentives indicates that such knowledge and skills were treated as a kind of property. Notably, despite the prevalence of torture for treason, heresy, and more, there is no evidence for a government using it to forcibly extract artisanal or contemplative knowledge out of its own citizens, at least as a regular practice. Beyond artisanal guilds, philosophers and scholars often distributed their manuscripts in limited and carefully controlled circumstances, such as in the secret knowledge societies of the Neoplatonists and Neopythagoreans.⁶

Trademark law, often categorized today within IP, arose from arguably a different—albeit related—impulse. Alternately suggested as arising for guild artisans to distinguish their goods in the marketplace, or for purchasers to do so, enforceable trademarks may have facilitated public commerce. Artisans and purchasers alike need not have direct interaction to have some confidence that goods traveling through secondary markets (resales) originated from a particular artisan, shop, or guild. This identification could be useful for quality assurance or even perhaps liability. Trademarks thus operate differently from the other forms of IP vis-à-vis the public-private divide. Trade secret law allows enforceability of the private. Patent law and copyright law arguably incentivize the transfer of knowledge or skills from the private to the public. Trademarks allow tracing of manufactured artifacts in what is effectively “public” commerce—freely alienable goods that can change hands without permission of the original manufacturer or owner.

The second kind of property posited in this Article arose when states formalized ad hoc exclusive patent and copyright grants into roughly standardized, deeded, and assignable property. The best examples of this are the registered property rights under the British Statute of Anne for copyright, and then the British and American patent systems of the

⁴ See, e.g., Ted Sichelman & Sean O'Connor, *Patents as Promoters of Competition: The Guild Origins of Patent Law in the Venetian Republic*, 49 SAN DIEGO L. REV. 1267, 1272 (2012).

⁵ See, e.g., Frank D. Prager, *Brunelleschi's Patent*, 28 J. PAT. OFF. SOC'Y 109, 109–10 (1946).

⁶ See PAMELA O. LONG, OPENNESS, SECRECY, AUTHORSHIP: TECHNICAL ARTS AND THE CULTURE OF KNOWLEDGE FROM ANTIQUITY TO THE RENAISSANCE 55–58 (2001).

eighteenth and nineteenth centuries.⁷ This Article adopts free alienability as a key test of whether something is deemed to be property. British, American, and then other nations' statutes soon would expressly grant formal registered patents or copyrights the status, or at least attributes, of property. But cases such as *Millar v. Taylor*,⁸ *Donaldson v. Becket*,⁹ and *Wheaton v. Peters*¹⁰ would explore the fraught interaction of private or common-law rights (what this Article characterizes as the first kind of natural property rights) and public registered rights (the second kind of regulatory or deeded property rights).¹¹ Crucially, the property here is the deed and whatever information or codified knowledge it contains.

Neither trade secrets nor trademarks have as clear an analog for this second kind of property. Trade secrets generally are not formal, deeded, or registered rights. Trademarks can be registered, but traditional Anglo-American doctrine does not permit them to be treated as other freely alienable property.¹²

Following formalized patent and copyright grants, a third kind of property became choate in the goods embodying the patent or copyright. Before the doctrines of exhaustion or first sale emerged, courts and commentators sometimes treated such artifacts as part of the patent or copyright. For example, a patent included not only the exclusive rights to make and sell a physical embodiment of it, but also to use that object *even after it was sold*.¹³ Thus, downstream purchasers needed to ensure they had a license from the patent owner to use the object they had purchased. The exhaustion and first-sale doctrines later limited such downstream control, but tensions remain in the exact contours of the relevant rights, especially when physical objects are leased, licensed, or delivered as part of a service.¹⁴ Accordingly, tangible goods covered by patents or copyrights can be seen as a separate kind of property—generally alienable like other chattels, but perhaps with restrictions imposed by the patent or copyright.

⁷ The Venetian system that emerged in the fifteenth century was fairly regularized and a major precursor to the later British and American systems, but it arguably did not rise to the level of modern statutory IP systems. Further, while the rights were licensable, it is less clear that they were deeded or transferable *in toto*.

⁸ (1769) 98 Eng. Rep. 201; 4 Burr. 2303 (KB).

⁹ (1774) 1 Eng. Rep. 837; 4 Burr. 2408 (HL).

¹⁰ 33 U.S. 591 (1834).

¹¹ Natural-property law proponents, however, do not restrict property justifications to privately held objects or knowledge, but rather extend them to things in the public sphere as well. See *infra* Part II.

¹² See Kenneth L. Port, *The Illegitimacy of Trademark Contestability*, 26 IND. L. REV. 519, 553 (1993).

¹³ See *infra* Part I.

¹⁴ See *infra* Part III.

The fourth kind of IP property includes contractual assignments or licenses. While not falling within classic conceptions of real or personal property, contracts arguably can be as much property as other intangibles considered personal property, such as stocks, bonds, negotiable instruments, and even patent, copyright, or registered trademark titles. Unless prohibited by the contract's own terms or particular contract law doctrine, parties to a contract can freely assign or delegate their rights or responsibilities under it. As a practical matter, all manner of contracts—including those involving IP—are bought and sold every day. In appropriate cases, they are treated by practitioners and courts as personal property. Importantly, one must distinguish the property rights being conveyed under the contract—say a license to use a patented invention—from the property rights to the contract itself. In other words, the contract itself can be sold to a third party (and thus is alienable), which *also* results in the purchaser now holding whatever real or personal property rights, in part or in total, that are conveyed through the contract.

An illustration of why these two kinds of property do not collapse into each other is found in a complex manufacturing contract. Many other provisions beyond a simple IP or other property assignment or license are included in such a contract including quality control and forecasting the number of units to be ordered and manufactured. In fact, many of these other provisions will survive any expiration or invalidation of IP rights that form part of the contractual arrangement. The contract is a bundle of rights and obligations that can be sold much like title to real or personal property (and their bundle of rights and perhaps some obligations) can be sold.

This Article argues that the natural-property and the regulatory-property camps in IP—sometimes characterized as IP maximalists and minimalists, respectively—have been talking past each other because they are each focused on different kinds of property within this multidimensional zone of legal title and rights. The natural-property proponents should really be saying that there are strong moral, pragmatic, or political bases for property rights in knowledge, methods, and expression that originate from private thought or action and then are extended into the public sphere. Presumably few individuals on any side of the IP debates would support the specter of using the state's power to forcibly disgorge or extract ideas and skills from a human being who had not disclosed them to anyone else. Further, modern trade secret and privacy laws support injunctive relief against those who would unreasonably invade someone's private domain to acquire and use things sequestered there without permission. Accordingly, the real issue is under what conditions individuals will deploy private knowledge or skills in the public sphere.

On the other hand, the regulatory-property proponents must realize that the state-issued title is only one part of the total picture. Such

proponents' reliance on blunt utilitarianism when it comes to ownership or control of innovative work product is in conflict with their strong commitment to individual rights in other areas, often including identity politics. Perhaps this mirrors the general population that might be characterized as eclectic pragmatists, willing to cobble together any number of justifications to address a particular problem even if that results in contradictory philosophical commitments. In any event, a commitment to true or strict utilitarianism is not broadly held either across the general population or among regulatory property proponents. Instead, the apparent support for "IP utilitarianism" likely results from decades of successful rhetoric by some academics and commercial actors who seek to weaken particular IP rights. This rhetoric generally targets the populist desire for free or low-cost goods and services. It does not evince any well thought out or principled commitment to true utilitarianism. Perhaps exacerbating these tendencies, inventors and creators are a minority group often perceived as having already been handsomely and publicly remunerated for their efforts.

Part I of this Article sets out the broader context of the public-private distinction in Greco-Roman antiquity and how that distinction shaped longstanding notions of de facto property in private things, including knowledge and skills. It also briefly considers the fundamental act of *publicare* (or *publicatio*), which serves to shift the thing to the public sphere, resulting in a change of the thing's status and the rights of its owner. Part II chronicles the emergence of state-issued exclusive rights and property-type rights in the struggle for control of the means of innovation in the early modern period up into the nineteenth century. Part III considers the physical and digital embodiments of both private and public IP as they are publicly distributed, displayed, or used. Finally, Part IV turns to licenses and other contracts used to convey title and rights to the two kinds of private and public IP, which in turn become their own species of property.

I. The Property of the Private

Beginning at least with the Ancient Greeks, advanced societies began distinguishing public and private spheres. The home was separate from the *agora* (the public assembly space), and individuals with "public lives" and presences were understood to decide which things to share or commit to the public sphere and which to keep private in the home.¹⁵ The public-private divide encompassed both linguistic statements and artisanal know-how. Male citizens were expected to participate in public life and

¹⁵ See Josiah Ober, *The Polis as a Society: Aristotle, John Rawls and the Athenian Social Contract*, in *THE ANCIENT GREEK CITY-STATE* 129, 136, 142-43 (Mogens Herman Hansen ed., 1992).

governance.¹⁶ In fact, the origins of the modern word *idiot* come from the Ancient Greek *idiotes*, meaning an uneducated person who takes no part in public life, remaining private and not contributing usefully to society.¹⁷ And perhaps most important, liability attached to public statements in ways that they did not attach to private ones.¹⁸

Such liability partly explains the secret knowledge cults that had already existed since the time of Pythagoras—he of the Pythagorean Theorem. The famed mathematician’s school was structured as a brotherhood of the type that may have been a predecessor for the Roman *collegia*, discussed later in this Article.¹⁹ It sought to train the whole person with a combination of secret know-how, practices, and knowledge based largely around the “fourfold way” (later Latinized as the “*quadrivium*”) and providing one of the core roots of the classical seven liberal arts.²⁰ Its interrelated disciplines of arithmetic, geometry, math, and astronomy (or “spherics”) worked together to create a holistic approach to understanding the cosmos.²¹ Differing from other educational systems of the time, the Pythagorean system was not aimed at producing competent men for the administrative bureaucracy, but rather at producing individuals who sought purely personal growth or development in their private lives.²² It also was not open to all citizens, and its “graduates” viewed themselves as elite and aloof from the general public.²³ To be clear, such secret societies conveyed both written philosophical knowledge and innovative know-how, demonstrated in person in the form of show-how. Thus, things that later could be protected by copyright, trade secret, and patent law were included, and not just abstract knowledge.

The third century BCE formation of the Alexandrian Museum and Library resulted in a major step forward for knowledge codification.²⁴ Thus, in the next few pages we will focus on the written or “copyright” side of the public–private distinction. While often referred to today as the Library of Alexandria—thus evoking the twentieth-century sense of a library as a mere repository of books—the Alexandrian Museum and Library was a combination of modern academic retreat-resort (like the Rockefeller

¹⁶ See *Athens*, THE BRIT. MUSEUM, <https://perma.cc/MML9-PPJK>.

¹⁷ See *Idiot*, OXFORD DICTIONARY OF ENGLISH 2227 (Angus Stevenson ed., 3d ed. 2010).

¹⁸ See, e.g., Plato, *Apology*, INTERNET CLASSICS ARCHIVE, <https://perma.cc/9HV4-SQCQ>.

¹⁹ See OLAF PEDERSEN, THE FIRST UNIVERSITIES: *STUDIUM GENERALE* AND THE ORIGINS OF UNIVERSITY EDUCATION IN EUROPE 8 (Richard North trans., 1997).

²⁰ *Id.*

²¹ See *id.*

²² See *id.* at 9.

²³ See *id.*

²⁴ See, e.g., LIONEL CASSON, LIBRARIES IN THE ANCIENT WORLD 31 (2001).

Foundation's Bellagio Center),²⁵ book repository, manuscript production and copying center, and perhaps even proto-university.²⁶ Its work generated not only an outstanding collection of *epistemé*, *praxis*, and literary works, but also an expansion into writings on some mechanical arts, especially in the area of military arts and devices.²⁷ Pamela O. Long argues that military leaders apparently had little interest in concealing technical aspects of weaponry because at the time they still believed that battles and wars were ultimately won or lost through *praxis* leadership.²⁸

The Library also appeared to pioneer an entirely new phase of codification in the form of critical study and commentary based on authentic textual *attribution*.²⁹ Long proposes that librarians at Alexandria began a meta-commentary-centered quest for originality and authenticity in texts and authors.³⁰ The Library's obsession with original copies of works exemplifies this proposition.³¹ The creation of a rival library in Pergamon heightened the value of original manuscripts as the two libraries competed for them.³²

²⁵ See *The Bellagio Center*, THE ROCKEFELLER FOUND., <https://perma.cc/64FT-AE36>.

²⁶ See, e.g., LONG, *supra* note 6, at 25. The manuscript-production aspect was not without controversy. Long recounts Diana Delia's description of the process as "confiscation, copying, and the production of new works and translations." *Id.* Also misleading for the modern reader is the term "Museum" in the title. Originally the term was directly connected to its linguistic-root-related term "Muses," and it was essentially a place of recognition and tribute to the Muses and the skills and knowledge they inspired. See *id.*; see also Bonnie Pitman, *Muses, Museums, and Memories*, 128 DAEDALUS 1, 2 (1999). But even this can be misinterpreted today, as we still operate in the wake of the nineteenth-century Romantic period in which the Muses were redirected and limited to the emerging sense of the Fine Arts. For the Ancients, the Muses were inspirational for the liberal arts instead. Aristotle's Lyceum was dedicated to them as was the new Alexandrian Museum and Library. Compounding this change in the sense of "Muses," the term "Museum" today is popularly held to mean "museums"—those places with old artifacts on display. See Pitman, *supra* at 1.

²⁷ See LONG, *supra* note 6, at 25–27. Ctesibius, perhaps the first of these Alexandrian military arts authors, wrote about his military inventions (improved catapults) and pneumatic inventions (force pumps for air and water, hydraulic organ, water clock) in his now lost *Commentaries*. *Id.* at 25. Philo of Byzantium wrote on catapults, pneumatics, fortresses, besieging and defending towns, stratagems, and, by repute, early cryptography. *Id.* at 25–27.

²⁸ Long also cites her work with Alex Roland, as well as works of Astrid Schürmann, to argue that such writings were intended to be "displayed" at the Ptolemaic court. *Id.* at 27.

²⁹ See *id.* at 27–29; see also PEDERSEN, *supra* note 19, at 16–19.

³⁰ See LONG, *supra* note 6, at 28.

³¹ Library agents both purchased original books at markets and seized all books on ships entering the harbor at Alexandria. *Id.* at 27. The obsession with originality was evidenced by the fact that the Library agents would copy the seized books and then give the *copies* back to the ships. See *id.* Galen, a second-century CE physician, reported that the Librarians also tricked Athenians into lending books based on a fifteen-talent deposit, but then returned copies, not the originals. *Id.*

³² See *id.* at 28.

In the market created by Alexandria and Pergamon for originality and authenticity of papyrus scroll manuscripts, notions of manuscript forgery and plagiarism arose.³³ Aristophanes of Byzantium, a director of the Alexandria Museum and Library (and not the satiric playwright), developed advanced systems in critical marks for pronunciation, grammar, and authenticity of written works, furthering the meta-study of texts as social productions.³⁴ Neoplatonist philosopher Porphyry reported that Aristophanes was apparently also the author of a lost book on plagiarism, in which he exposed plagiarism in the work of Greek comic playwright Menander, referring to it as “stealing” (*eklepsen*).³⁵ Aristophanes “rebuked Menander but gently on account of his great fondness for him.”³⁶ It is not clear whether this reflects a culture of mild reproof of plagiarism, or a stricter one, mediated in this case only by personal friendship and/or respect.

From the first century BCE to the first century CE, Greek Peripatetic philosophers took textual commentary to another level with close exegesis of written works, largely stemming from their interest in promoting Aristotle’s *Categories*.³⁷ Andronicus of Rhodes used new methods of textual-commentary analysis to test philosophical works for authenticity and authorship.³⁸ His student, Boethus of Sidon, carried out a “word-by-word exegesis” of the *Categories* leading beyond authenticity and authorship to analysis of meaning as well.³⁹

The emerging sense of “publication” as the flip side of attribution was equally important to manuscript culture. Formally called *publicare* in the Latin of ancient Rome, publication represented a public dedication of, or commitment to, one’s ideas and expressions.⁴⁰ Andronicus, for example, “published” the treatises of Aristotle in the sense that he “εἰς μέσον θείναι,” or literally, “put them into the middle,” presumably of the public square (in at least a metaphorical sense).⁴¹ Such a commitment was a

³³ See *id.* at 28–29.

³⁴ See *id.* at 28.

³⁵ *Id.*

³⁶ LONG, *supra* note 6, at 28.

³⁷ See Richard Sorabji, *Introduction: Seven Hundred Years of Commentary and the Sixth Century Diffusion to other Cultures* to ARISTOTLE RE-INTERPRETED: NEW FINDINGS ON SEVEN HUNDRED YEARS OF THE ANCIENT COMMENTATORS 1, 3–8 (Richard Sorabji ed., 2016).

³⁸ See Myrto Hatzimichali, *The Texts of Plato and Aristotle in the First Century BCE: Andronicus’ Canon*, in ARISTOTLE RE-INTERPRETED: NEW FINDINGS ON SEVEN HUNDRED YEARS OF THE ANCIENT COMMENTATORS 81, 97–102 (Richard Sorabji ed., 2016).

³⁹ MICHAEL J. GRIFFIN, ARISTOTLE’S *CATEGORIES* IN THE EARLY ROMAN EMPIRE 185–86 (2015).

⁴⁰ See sources cited *supra* note 1.

⁴¹ Thanks to Michael Griffin for pointing out this quote and its context. Email from Michael Griffin, Assoc. Professor, Dep’t of Philosophy, Univ. of B.C., Co-Editor, Ancient Commentators Project

weighty event, fraught with intellectual and corporal risk. As a result, manuscript culture highly attuned to the public-private distinction sprang up.⁴² Private manuscripts might be widely circulated—as a relative matter, given the constraints of literacy and transportation of the time—while “published” works might exist in single, undistributed copies. Thus, it is crucial to separate this “publication” from the sense of “printing” that would arise centuries later, as well as from any sense of numbers of copies as a marker for publication. The value of original and authentic manuscripts—public or private—was that they facilitated knowledge as to whether certain expressions (and the ideas behind them) were properly attributed to, and authorized by, a particular person or authority, whatever the consequences.⁴³

While most authors at this time were elites who perceived themselves as writing for a fairly limited circle of other elites, and for whom this was the properly modest position, some were becoming cognizant of a potential reading public as extensive as the expanding Roman Empire.⁴⁴ In a society in which status and reputation were everything, authors were keenly aware of the perils of formally or widely releasing writings that might contain errors. For those writers who had no personal fortune or estate and thus relied on patronage to survive, they felt caution and a need to please that was even more acute. The lack of legal means to control a writing meant that they possessed no effective means of limiting the distribution of a work once released. At best, the author could try to release a corrected second edition, but whether or not the public accepted this and replaced or amended their first edition copies was hit or miss.⁴⁵

Thus, the majority of authors first circulated their works to trusted acquaintances for review and criticism. Roman poet Horace in fact warned prospective authors to keep a work in private review for nine years with the admonishment *nescit vox missa reverti* (“the word once uttered cannot be recalled”).⁴⁶ Roman author Symmachus advised, “Once a poem has left your hands, you resign all your rights; a speech when published is a free entity.”⁴⁷ Some of the poets who died before publishing their work may have been holding back to postpone the day of reckoning (for their

(Bloomsbury) (Sept. 20, 2018, 19:55 PST) (on file with author) (quoting PLUTARCH, *The Life of Sulla*, in 4 THE PARALLEL LIVES ch. 26, §§ 1–2, at 408 (Bernadotte Perrin trans., Loeb Classical Library 1916)).

⁴² See E.J. Kenney, *Books and Readers in the Roman World*, in 2 THE CAMBRIDGE HISTORY OF CLASSICAL LITERATURE 10–15 (E. J. Kenney & W. V. Clausen eds., 1982).

⁴³ See *id.*

⁴⁴ See Raymond J. Starr, *The Circulation of Literary Texts in the Roman World*, 37 CLASSICAL Q. 213, 219–23 (1987).

⁴⁵ See *id.* at 218–19.

⁴⁶ Kenney, *supra* note 42, at 11.

⁴⁷ *Id.* at 19.

works at least!) as long as possible.⁴⁸ It appears that Roman poet Virgil tried to ensure that his unfinished *Aeneid* would never be published, just circulated privately.⁴⁹ The younger Roman author Pliny and his circle were apparently obsessed with full critical vetting before publication.⁵⁰

Professor E. J. Kenney expounds on Symmachus's quote, adding that the term which was usually translated to "publish" (*edere*, from the Greek εκδιδοναι) connoted "the resignation of rights *and responsibilities*" with regard to the work.⁵¹ To a lawyer, this sounds like the author would have no potential *liability* for a work and its content once "published." However, that clearly cannot have been the case because there are many examples of authors being held accountable for their written views in antiquity and beyond that rebut this.⁵² At the same time, an author *could* claim that the particular copy of a work found offensive was not his authentic writing.⁵³ And whether this were or were not the case, the author could usually publicly recant the offensive positions orally or in writing.⁵⁴ But these are remedies that only underscore the responsibility—in the liability sense—that authors had for their published works. An alternate sense of "responsibility" that Kenney and others may have in mind is that of maintenance: updating or correcting the published work. It would make perfect sense for authors—in a system wherein they were deemed to have "abandoned" a particular work to the public once it was "published"—to believe they had no maintenance-type responsibilities for work that was now effectively owned by the public.⁵⁵

For such a weighty event, "publication" was ill-defined during this time. There was no form, no prescribed steps, and no necessity for a "publisher" in the modern sense who granted exclusive rights to copy and

⁴⁸ See *id.* at 11.

⁴⁹ See *id.*

⁵⁰ See *id.*

⁵¹ *Id.* at 19 (emphasis added).

⁵² See, e.g., Alex J. Novikoff, *Peter Abelard and Disputation: A Reexamination*, 32 RHETORICA 323, 328 (2014) (chronicling the Council of Soissons's 1121 decision to burn *Theologia summi boni* and condemn author Peter Abelard).

⁵³ Cf. James McJunkin, *Out of the Hands of Slaves: A Comparative History of the Roman Book Production Economy*, DARTMOUTH ANCIENT BOOKS LAB (May 24, 2016), <https://perma.cc/QSK4-5UW8> (recounting the propensity for errors in copies of original works).

⁵⁴ See, e.g., ALEXANDER WINCHELL, RECONCILIATION OF SCIENCE AND RELIGION 75 (1877) (noting Roscellinus's forced recantation before the Council of Soissons in 1092).

⁵⁵ The "abandon to the public" sense of publication is certainly consonant with the modern sense of a "public domain," which does not formally appear until the nineteenth century. See B. M. W. Knox & P. E. Easterling, *Books and Readers in the Greek World*, in 1 THE CAMBRIDGE HISTORY OF CLASSICAL LITERATURE: GREEK LITERATURE 20 (P. E. Easterling & B. M. W. Knox eds., 1985).

distribute the work.⁵⁶ This lack of definitiveness and formality continued into the early modern period.⁵⁷ Thus, it was simply by personal word or action that “publication” occurred: the author would either say he was making his work public (*edere* and later *publicatio*) or he would intentionally or otherwise give copies to people who would in turn further copy or distribute it.⁵⁸

By the first century CE, publication had at least one formal route, due to the rise of commercial booksellers and the book trade.⁵⁹ Any author’s agreement with a bookseller to copy and distribute his book was clearly a publication. Further, this agreement—which often carried defined remuneration for the author—may well be the root of the practice or custom of respecting first rights of publication and the notion that publishers had to buy the book from the author, centuries before any formal copyright system had emerged.

To a certain degree, private circulation and vetting processes are good; on balance it is better to have a well thought out and critiqued literary product than a rushed, unconsidered work. But beyond that, the public can lose out because potentially valuable works are not released beyond an elite group, and authors might unknowingly undertake redundant work. Pamela Long, for example, worries about just how open, as a practical matter, ancient and then early modern “scientific” literatures actually were.⁶⁰ While intellectuals of both periods professed a sense of openness as a value, in practice this often meant simply that other elites or cognoscenti within a limited professional circle would get access to some or all of the work.⁶¹ It did not necessarily mean the work was open to the public in the twentieth-century Mertonian vision of scientific norms of

⁵⁶ Kenney and others discount notions that Atticus served as a “publisher” in this commercial manner to Cicero, countering that instead he assisted Cicero as a friend in distributing the latter’s works. See Kenney, *supra* note 42, at 20. Notwithstanding, historians such as Kenney document a commercial book trade beginning in Rome during Cicero’s time. There is some chance that authors were able to collect fees from booksellers for “authorized” and exclusive correct or authentic source copies of the author’s work, but it seems clear from the record that ancient writers’ references to “profits” from their writings were either nonpecuniary or were profits actually received by *others* from sales of copies of the author’s work. See *id.* at 21. At the same time, an author’s use of a bookseller might increase the chance that quality, accurate copies would be distributed. *Id.* at 21–22. It was also a convenient screen to send inquiries for copies to one’s bookseller. *Id.* At any rate, by the end of the first century CE, it was apparently routine for new books to be first distributed through trade channels, whereas this did not hold for earlier periods. See *id.* at 20.

⁵⁷ See *id.*

⁵⁸ See *id.* at 19–22.

⁵⁹ See *id.* at 20.

⁶⁰ See LONG, *supra* note 6, at 3–4.

⁶¹ See *id.* at 13–15.

“openness.”⁶² Notwithstanding the obsessive retention of physical instantiations of a work, authors in Imperial Rome increasingly used the public or semi-public format of *recitatio* (oral readings by the author) as both a sincere quest for helpful critique and a form of advertisement or puffery in a different quest for patronage.⁶³

Long identifies two major strands of substantive, nonfiction writings in the Roman Republic and the Empire up until the third century CE: *techné* writings by architects on mechanical arts and *praxis* writings by elite members of the ruling class.⁶⁴ Architects’ *techné* writings were for libraries, rulers, and other architects.⁶⁵ Elite members of the ruling class wrote *praxis* writings for peer elites, building them off the handbooks that established the Latin encyclopedia tradition.⁶⁶ The goal was to create comprehensive yet readable works that could give one’s peers all the basic information they would need to rule in the public, military, and private spheres.⁶⁷

Techné writings give a window into not only the continuing public-private tension for writings, but also that for innovative know-how later covered by trade secrecy and patents. Such writings give insight into the state of the practitioner’s art. But, equally, analyzing both what was said and what was left out suggests the continued conflict between keeping craft know-how private and exclusive to artisans and their *collegia*—essentially trade secrecy in the era before patents—and putting it into the public sphere.

The zenith of classical antiquity advancement in *techné* writing was likely Roman author Vitruvius’s *De Architectura*.⁶⁸ Perhaps emboldened by fellow Roman author Varro’s inclusion of architecture as a liberal art, Vitruvius secured its inclusion by making a science of it through a learned treatise.⁶⁹ At this time, architecture was in an ambiguous position, existing somewhere between “servile craft” and “liberal art.”⁷⁰ Echoing Greek architect and writer Philo of Byzantium, Vitruvius insisted that *ratiocinatio* (reason), writing, and *fabrica* (fabrication) must be brought together in

⁶² See *id.* at 5–6.

⁶³ See Florence Dupont, *Recitatio and the Reorganization of the Space of Public Discourse*, in *THE ROMAN CULTURAL REVOLUTION* 44, 45–46 (Thomas Habinek & Alessandro Schiesaro eds., Thomas Habinek & André Lardinois trans., 1997).

⁶⁴ LONG, *supra* note 6, at 34–35.

⁶⁵ *Id.* at 35.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ See, e.g., *id.* at 30–31.

⁶⁹ *Id.*

⁷⁰ LONG, *supra* note 6, at 30–31.

architecture and engineering.⁷¹ He emphasized imitation of nature and learning by demonstration and doing.⁷² Equally importantly, Vitruvius took the side of openness in what would become a long-running tension between those who would keep craft private as a closed guild and those who would have it be open.⁷³ Those who favored “open craft” published (made public) works of learning and instruction so that others could see the skills possessed by the author.⁷⁴ This both advanced the field, because others could see and build on that knowledge, and allowed potential employers to judge the merits of the artisan without relying solely on reputation and salesmanship.⁷⁵

Notwithstanding Vitruvius’s commitment to openness, he was a staunch defender of attribution. Plagiarism was theft.⁷⁶ Long connects Vitruvius’s calls to censure and punish plagiarists who “steal the writings of [great] men and publish them as their own” and thus lead an “impious manner of life,” with his calls for capital punishment for those even simply criticizing dead authors.⁷⁷ She attributes this to the revival of traditional Roman religion under Augustus Caesar and a view of such criticism as parricide against the dead (who cannot defend themselves by explaining or recanting their publications).⁷⁸ Long before Isaac Newton’s famous invocation of the phrase and sentiment of “standing on the shoulders of giants,” Bernard of Chartres expressed a version of it in medieval times—which is likely where Newton had learned of it.⁷⁹ Similarly, Vitruvius was sincerely grateful for the generations of codified knowledge already established by his time that allowed those in the present and the future to benefit from past learning.⁸⁰

The proper *praxis* end for most elite male students in this period was to engage in private and public “declamations,” so authors geared their

⁷¹ *Id.* at 31.

⁷² *See id.*

⁷³ *Id.*

⁷⁴ *See id.*

⁷⁵ *Id.* at 31–32.

⁷⁶ *See* LONG, *supra* note 6, at 32. Vitruvius recounted an apocryphal story in which Aristophanes of the Alexandria Museum and Library voted for the least popular poet in a poetry contest because he had investigated all the poems and found this to be the only one not plagiarized. *Id.* The king approved and then punished the “poetry thieves.” *Id.* The telling of the story suggests the difficulty of creating truly novel works versus the relative ease of creating popular works by simple copying. *See id.*

⁷⁷ *Id.*

⁷⁸ *Id.* at 33.

⁷⁹ *See* EDWARD GRANT, *THE FOUNDATIONS OF MODERN SCIENCE IN THE MIDDLE AGES* 161 (1996); JAMES HANNAM, *GOD’S PHILOSOPHERS: HOW THE MEDIEVAL WORLD LAID THE FOUNDATIONS OF MODERN SCIENCE* 1 (2009).

⁸⁰ *See* LONG, *supra* note 6, at 32.

writing towards these oral formats.⁸¹ This underscored the priorities in Roman culture and education, where facts and philosophy were merely tools for rhetorical persuasion. The educated man was not so much trying to create new knowledge, rather, he was simply trying to learn existing or established knowledge—in summary encyclopedia or handbook form preferably—to use as argument points.⁸² In this way, Roman philosopher Cicero’s ideal of *humanitas* was not scholarly or scientific; rather, it was a means of developing the refined man to have working knowledge of the nine core disciplines—the key points of Greek philosophy—in order to operate successfully in Roman public life.⁸³ But this practice resulted in a problem. A steadily declining set of individuals knew how to engage in real research and scholarship, and there were fewer books that described or taught those processes (handbooks and encyclopedias, the summaries of knowledge as “content,” did not).

Roman author Pliny’s approach to writing as compilation typified authorship of the time.⁸⁴ The authorial value lay in the selection and editing, rather than any sense of originality.⁸⁵ More generally, an author was the authority under which any project was accomplished, whether that be writing, building, warfare, or legislation.⁸⁶ Ideally, authorship calls for attribution, as a matter of piety and respect, and Pliny also gave an early anticipation of the standing on the shoulders of giants theme when stating that it was “a pleasant thing and one that shows an honourable modesty, to own up to those who were the means of one’s achievements.”⁸⁷ At the same time, “authority” unfortunately did not guarantee accuracy, and major errors plagued the Latin encyclopedias and handbooks.⁸⁸

⁸¹ See *id.* at 42–43.

⁸² See PEDERSEN, *supra* note 19, at 20–21.

⁸³ See *id.*

⁸⁴ See GRANT, *supra* note 79, at 13; LONG, *supra* note 6, at 41.

⁸⁵ See LONG, *supra* note 6, at 43.

⁸⁶ *Id.* at 41–42.

⁸⁷ *Id.* at 41. Pliny writes,

For you must know that when collating authorities I have found that the most professedly reliable and modern writers have copied the old authors word for word, without acknowledgment . . . Surely it marks a mean spirit and an unfortunate disposition to prefer being detected in a theft to repaying a loan—especially as interest creates capital.

Id. Long believes that Pliny’s last sentiment in the quotation indicates his belief that the overall store of knowledge is enhanced somehow by making explicit the lineage of ideas and authorities. See *id.* This could be similar to our modern senses of the value of intellectual histories and literature reviews.

⁸⁸ See GRANT, *supra* note 79, at 13.

As the earlier Roman Republic urbanized, cities and towns grew too large to serve as a single social circle for all municipal citizens.⁸⁹ Accordingly, reaching back into an obscure past,⁹⁰ Romans established smaller units known in Latin as *collegia*, a term sharing the root with our modern “colleague” and “collegial.”⁹¹ This pattern may reflect the modern anthropological studies, which suggest that human societies tend to aggregate into local groups and literal or figurative tribes of around 150 members.⁹² Whatever the roots and explanations, these *collegia* were well established going into the Republic, “emerg[ing] into daylight, like the private law, in the Twelve Tables,” and they expanded to fill a range of purposes.⁹³

The *collegia* seem to have had authority, or at least tacit permission, to make their own statutes or bylaws, or in some cases, the state may have done this for them.⁹⁴ Either way, this demonstrated another level of nested social ordering in ancient Rome: the state, the city or town, the college, and the family. It is unclear, however, whether permission or authorization from the state was needed for the *collegia* to form or to be recognized as legitimate.⁹⁵ The “normal” college was a collection of male neighbors or

⁸⁹ See John R. Patterson, *The Collegia and the Transformation of the Towns of Italy in the Second Century AD*, PUBLICATIONS DE L'ÉCOLE FRANÇAISE DE ROME 237–38 (1994).

⁹⁰ Some Roman writers attributed the origins of a handful of *collegia* all the way back to the reign of Numa, one of the pre-Republic kings. See P. W. DUFF, PERSONALITY IN ROMAN PRIVATE LAW 103 (1938). They also linked legal support for the *collegia* to similar support for Solon's laws in Greece. See *id.*

⁹¹ See *id.* at 102.

⁹² See, e.g., Aleks Krotoski, *Robin Dunbar: We Can Only Ever Have 150 Friends at Most*, THE GUARDIAN (Mar. 13, 2010, 7:05 PM), <https://perma.cc/WZ9R-QU7U>.

⁹³ See DUFF, *supra* note 90, at 103.

⁹⁴ *Id.* at 103–04.

⁹⁵ Duff reports Saleilles's claim that from the inception of the Republic until the establishment of the Twelve Tables in 450 BCE, the Senate had the duty to monitor statutes of privately created *collegia* and condemn any that violated the law. *Id.* In 451–450 BCE, after the establishment of the Republic and the increased power of the plebeians, a ten-man commission was charged to codify the old law, presumably in a manner sympathetic to the issues of the plebs, and perhaps in some ways an antecedent to Magna Carta in England, which would balance the rights of the monarchy, landed aristocracy, and common persons through the establishment of the “common law.” PEDERSEN, *supra* note 19, at 25; see DUFF, *supra* note 90, at 104. Just before the establishment of the Twelve Tables, and inferentially, perhaps playing some role in their issuance as a response, the Senate stepped up its oversight of the *collegia* by requiring every new one to submit its statutes for approval as a prerequisite to coming into recognized existence. See DUFF, *supra* note 90, at 104. The rules in the Twelve Tables then cut back on this Senate oversight, pushing the burden on a reasonable allegation of problematic statutes for a college before any action. *Id.* However, there is little textual evidence for this account, and Duff notes that it is equally likely that the Senate was not the authority to oversee the *collegia*, at least up until 300 BCE, which instead would have been under the jurisdiction of the magistrate, who could consult the Senate if he wished, but need not to take any action. *Id.* At the same time, the Twelve

workers in the same trade, who chose a particular god for protection and worship, held regular banquets as social and religious gatherings, and were governed by a hierarchy of officials whose titles and roles often imitated those of the municipal towns.

The most common category of *collegia*—the various *collegia salutaria* or *collegia tenuiorum*—were fraternal societies, somewhat like our modern-day Rotary or Lions clubs, which also served an apparently needed function of ensuring and providing for the proper burial of their members. This was especially important for those in the poor and working classes who might not be able to afford such burials through whatever estate they left at death. Thus, the *collegia* collected subscriptions (dues or fees) regularly from their members, which created a kind of burial insurance fund that would then be tapped for each deceased member's funeral. While each member could be assured that a certain minimal amount would be spent on his burial, he did not hold a personal account in the fund, and thus could not draw on it, and the account could be attached or claimed by creditors. The *collegia* also generally assured a decent turnout at a person's funeral, which most Romans judged to be very important. Although not explored in this Article, another category of *collegia*—the publicly established or religious ones, such as the *sodalitates sacrae*—existed at this time. Public or administrative law governed this category of *collegia*, and thus this category of *collegia* is neither a creature of, nor generally subject to, private law.⁹⁶

Beyond the foregoing associations, the *collegia opificum* and *collegia artificum* organizational forms are of particular interest here.⁹⁷ These were generally associations of artisans or merchants in specific fields, although they did not operate exactly as would the guilds of the later Empire, Byzantium, or medieval Europe.⁹⁸ Nonetheless, these early voluntary associations of artisans and merchants provided the roots of those later heavily regulated, and at times mandatory or even hereditary, guilds.⁹⁹ They also could wield leverage against the state, somewhat like modern unions. An episode from the late fourth century BCE illustrates this point. The *tibicines* (who may only have been informally associated at the time) had left the city in protest after losing their right to dine in the temple of Jupiter.¹⁰⁰

Tables themselves were destroyed by Gallic invaders in 390 BCE, although they were apparently passed down at least in oral memorization form to the time of Cicero. PEDERSEN, *supra* note 19, at 25.

⁹⁶ See DUFF, *supra* note 90, at 95–96, 100, 102, 127–28.

⁹⁷ “*Opificum*” is a Latin word for “work,” while “*artificum*” relates to artificers and artisanal production. See *id.* at 102.

⁹⁸ See *id.*

⁹⁹ See *id.*; see generally Ilias N. Arnaoutoglou, *Roman Law and Collegia in Asia Minor*, 49 REVUE INTERNATIONALE DES DROITS DE L'ANTIQUITÉ 27 (2002) (Belg.).

¹⁰⁰ DUFF, *supra* note 90, at 105.

The authorities responded by giving them wine and a nice reception where they had decamped to, and after they were passed out from drink, authorities returned them to the city with their dining privilege at the temple restored.¹⁰¹ This exemplifies that valuable trades could effectively negotiate for concessions from the state.

Other categories included the *collegia cultorum*, which were associations for religious purposes, and the *collegia iuvenum*, which were organized or at least encouraged by the government to train young men for service to the *populus* or to the gods.¹⁰² Members notoriously used specific *collegia* within these two categories for decadent, scandalous, political, or seditious purposes. This resulted in upheavals in the *collegia* system generally, as various leaders sought to dissolve or prohibit some or all *collegia*. Yet, they invariably resurfaced, officially or otherwise, in due course. Finally, there were looser associations or clubs that may not even have risen to the level of *collegia*, organized for things like sports and drinking.¹⁰³

By late antiquity, given the turmoil within and without the Empire, elite classes began turning inward to private and spiritual spheres, away from their classic outward, civic-minded earlier disposition.¹⁰⁴ This led to the rapid development of mystery cults, religious cults (including Christianity), alchemy, and magic.¹⁰⁵ Some of these, such as Pythagoreanism and Hermeticism, had much earlier roots, while others were of more recent vintage, such as Christianity and Neoplatonism.¹⁰⁶ Yet all evinced some degree of reverence for the past and indicated the coming sense of a pendulum swing from progress to regress.¹⁰⁷

The various cults also caused the pendulum to swing back from favoring publication and craft openness to favoring an obsession with perpetually private manuscripts and craft secrecy, increasing the tension between public and private.¹⁰⁸ Secrecy was the power of magic, which

¹⁰¹ *Id.*

¹⁰² *See id.* at 96–108.

¹⁰³ *Id.* at 99.

¹⁰⁴ Some historians attribute this to not only the turmoil that made civic engagement risky and unpleasant, but also to the shift from a pure aristocracy to a meritocracy of leadership. *See, e.g.,* LONG, *supra* note 6, at 46–47. Thus, as the rising sons of elite families found themselves without the automatic military and government positions their class had been accustomed to, they turned away from the public sphere. *See id.* This turning away may also have arisen in part from the sheer growth and unmanageability of the Empire, both literally and conceptually. *See id.*

¹⁰⁵ *Id.* at 46–51.

¹⁰⁶ *See id.* at 46–47.

¹⁰⁷ *Gress*, as a Latin cognate of *grad* and *gred*, meant “to step.” Thus, *pro-gress* meant to step forward, while *retro-gress* or *re-gress* meant to step backward (similar to *retrograde* for the apparent temporary backwards motion of a planet in the night sky).

¹⁰⁸ *See* LONG, *supra* note 6, at 46–47.

differed from ordinary craft of the time in the prevalence of literacy and use of written recipes and instructions among its practitioners.¹⁰⁹ Alchemy was similar, but may have originated merely as the prosaic quest to create imitation gold and silver jewelry that could be sold at reasonable prices to a “‘petit bourgeoisie’ with large pretensions and small means.”¹¹⁰ The mystery and religious cults were similarly situated, but they sought spiritual ends rather than the quest for material gain and power over the world that magicians and alchemists sought.¹¹¹ Note, however, that some of the “mystery” in the mystery cults was more due to their nature as craft guilds, in the now obscure sense of “mystery” as secret craft or technique.¹¹² But all of these groups generated extensive secret treatises as *scientia*, which increasingly used esoteric symbols.¹¹³

Secrecy to these groups was important for multiple reasons. First, if the techniques involved had the kind of efficacy claimed, then they could pose potential physical, mental, or spiritual harm to the uninitiated who tried to use them.¹¹⁴ Second, disclosure outside the carefully controlled indoctrination methods of the cult could risk public misunderstanding of the cult, leading to ridicule, inferior imitations, approbation, or even banishment and punishment.¹¹⁵ Third, magic and alchemy were already usually illegal, upon pain of death, in the Roman Empire.¹¹⁶ At the same time, there were no effective legal measures to protect secrecy, so these groups established the private mechanisms still associated with cults today: long initiation periods, rituals, and punishment for violations.¹¹⁷

By the late Roman Empire then, many who possessed knowledge of different kinds of craft skills were actively concealing these things. The

¹⁰⁹ *Id.* at 51.

¹¹⁰ *Id.* at 64. Metalworking artisans had found that they could make alloys out of things like tin, copper, and a small amount of asem that would resemble electrum, an argentiferous gold. *Id.* at 64–65. This allowed them to make imitation gold and silver jewelry. *Id.* at 65. It is unclear whether buyers were also well aware of the imitative nature of these products, or whether it was effectively a scam on the buyers (and both scenarios could have been occurring during the period). At any rate, enough progress was made in this emerging field that one author of a recipe for the process claimed the result would fool even goldsmiths. *Id.* From these mundane commercial and entrepreneurial roots, however, sprang a more ambitious agenda that often combined with esoteric mystery cults and magic beliefs to undertake that actual transmutation of base metals into precious ones, development of life extending elixirs, purification of the alchemist’s soul, and even the creation of a human being (or a companion demon). *Id.* at 63–64.

¹¹¹ *See id.* at 46.

¹¹² *Id.* at 71.

¹¹³ *Id.* at 57.

¹¹⁴ *See* LONG, *supra* note 6, at 47, 50–51, 54–55, 57, 65.

¹¹⁵ *Id.* at 51–52.

¹¹⁶ *Id.* at 51.

¹¹⁷ *See id.* at 51, 53–55.

most common route was through exclusive *collegia* or secret societies. Craft skills were conveyed through in-person demonstration only to other members or initiates. Private manuscripts were circulated among trusted circles. Some cognoscenti also used writings that were nominally open or published but which required knowledge of cryptic symbols to decipher, as discussed further below. That some authors, like Vitruvius, published openly and plainly does not undercut the extensive use of secrecy by others. An intriguing question is whether incentives for public disclosure, similar to patents or copyrights, would have emerged at this time had the Western Empire not been collapsing.

Byzantium—the Eastern half of the Roman Empire that continued on as the Western half disintegrated—continued the trajectory of strictly controlling the economy, centered around guilds as repositories of both skilled labor and valuable know-how.¹¹⁸ Artisanal, craft, and merchant trades further locked down the means of innovation, production, and trade within overlapped bindings of guild and state.¹¹⁹ Mystery, religious, and philosophical cults abounded, giving rise in large part to violent breaks over the use and worship of images, sculpted idols, and totemic relics.¹²⁰ Byzantium's experience may suggest that even if the Western Empire maintained, the trend towards secrecy of both literary and craft knowledge would have continued. However, this is difficult to prove.

While some criticize Byzantium for not contributing much in the way of new scientific, technological, or philosophical ideas—perhaps in part blaming the excessive controls and secrecy—the Byzantines' privacy was very effective in at least one regard: the so-called "Greek Fire." Developed in late antiquity, the process for generating Greek Fire consisted of multiple stages: creating a gel-type substance, loading the gel carefully onto ships and then into tube-like projectors, and then expelling and igniting the projectors to serve as a devastatingly effective flamethrower on enemy ships.¹²¹ In countless sea battles, Greek Fire saved the Byzantine Empire.¹²² But unlike nearly every other military technology of the time, Greek Fire was never reverse engineered or replicated by anyone outside the Empire.¹²³ Despite enemies capturing Byzantine ships with the technology on board, as well as defectors willingly or coercively giving up the secrets they

¹¹⁸ See GEORGE OSTROGORSKY, HISTORY OF THE BYZANTINE STATE 253–54 (Joan Hussey trans., 1969).

¹¹⁹ See *id.* at 254.

¹²⁰ *Id.* at 160.

¹²¹ See Robert Heege, Warfare History Network, *Greek Fire: The Byzantine Empire's Secret Weapon the Ancient World Feared*, NAT'L INT. (June 2, 2017), <https://perma.cc/JTH5-EFX7>.

¹²² See *id.*

¹²³ See *id.*

knew, Greek Fire remained a secret.¹²⁴ The core of the Byzantine Empire's success in keeping Greek Fire secret was this: there were know-how and recipe secrets at each stage in the chain of production and use, and the authorities were careful to strictly segregate sets of individuals initiated into each stage so that none had all, or even more than one, of the secrets.¹²⁵ Thus, even though enemies might have discovered part of the process, or recipes, apparently no foreign force was ever able to obtain *all* of the parts. Without all of them, no one succeeded in their attempts to replicate Greek Fire.¹²⁶

Ultimately, the Byzantines were too successful in their secrecy. Eventually, the proud Empire was reduced to a city-state centered around Constantinople.¹²⁷ And finally, its mighty earthen-defense walls, weakened by centuries of attacks (including one by Western-Christian Crusaders), succumbed to the Ottoman Turks in 1453.¹²⁸ Meanwhile, Greek Fire had already become a lost art to the Byzantines.¹²⁹ To this day, scientists and technologists have been unable to fully replicate either the substance or these various processes, although some have come close.¹³⁰ Importantly, to say this is a lost art means that both codified knowledge and craft know-how ceased to be conveyed in any integrated or workable sense. In this case, secrecy was likely warranted, but, without incentives for disclosure of literary or craft knowledge progress across Byzantium generally, was likely slowed as only carefully controlled initiates could have access to existing and new knowledge.

The kind of outsider innovations often valued today were arguably blocked during late antiquity because those outside a guild neither had access to nor could even practice craft knowledge even if they independently developed it. It is hard to overstate how different an economic landscape existed then. What we take for granted in modern Western capitalist economies—where anyone can try their hand at all but a limited set of regulated professions and even the latter are open to applicants who meet objective criteria—was not the norm. Rather, nearly all aspects of the economy were regulated by law or subject to the sovereign's caprice. This made secrecy even more antithetical to progress than it would be today.

As Byzantium finally collapsed in the mid-fifteenth century, the West had recovered from not only the so-called Dark Ages, but also the Muslim

¹²⁴ *See id.*

¹²⁵ *See id.*

¹²⁶ *See id.*

¹²⁷ *See* Heege, *supra* note 121.

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ *See id.*

and Viking incursions, as well as the Black Death, to enjoy sustained economic development.¹³¹ Commonly referred to as the Renaissance, this century also witnessed a flowering of literary and craft innovation. Rapid urbanization and the emergence of scholasticism, together with the peculiarly European institution of the new universities during the eleventh through fourteenth centuries, created a fertile environment for these dramatic advances in arts and sciences.¹³² But privacy and secrecy still ruled, with the guilds reemerging, in many cases as quasi-legal persons and branches of the new, sophisticated administrative states of artisanal and commercial centers (such as the Venetian Republic).¹³³ Similar to the Byzantium model, states locked down their economies and effectively propertized artisanal and craft know-how and restricted guilds by giving exclusive authority and rights or privileges over it to the quasi-governmental guilds.¹³⁴ There was little to no free enterprise by today's standards, nor was there any real "open innovation" or sharing.¹³⁵ State, guild, family, and individual all worked diligently to keep both already extant and innovative new know-how under wraps.

At the same time, limited, private circles of *cognoscenti* kept philosophical and "scientific" knowledge within.¹³⁶ The public-private manuscript divide for late antiquity remained in place and was arguably strengthened as the universities flourished and an early "republic of letters" was formed from the *lingua franca* of medieval Latin shared by all European Scholastic academics.¹³⁷ As Long points out, the public-private divide played out especially nicely in the reemerging field of *techné* writing by the new artisan-engineers, of which Leonardo da Vinci is the most famous today.¹³⁸ Underscoring this point is the fact that da Vinci *never published his major works in his life*.¹³⁹ Most of da Vinci's contemporaries, especially those outside the private circles of manuscript sharing, would not have known about many of his amazing insights, inventions, and processes. Even many of his competitor artisan-engineers did not publish formal and finished books, but rather produced them as one-off copies (really *the* sole finished copy) as gifts to princes and popes to secure patronage,

¹³¹ See, e.g., HENRI PIRENNE, *MEDIEVAL CITIES: THEIR ORIGINS AND THE REVIVAL OF TRADE* ch. 8, at 138–56 (Frank D. Halsey trans., 1st Princeton Classics ed. 2014) (1925) (ebook).

¹³² See PEDERSEN, *supra* note 19, at 250.

¹³³ See Sichelman & O'Connor, *supra* note 4, at 1271–73.

¹³⁴ *Id.*

¹³⁵ See *id.* at 1269.

¹³⁶ See LONG, *supra* note 6, at ch. 5, 143–74.

¹³⁷ See *id.* at 103–04.

¹³⁸ See *id.* at 129.

¹³⁹ See *id.* at 138.

obsequiously dedicated to an audience of one.¹⁴⁰ They resembled very long job applications, often disclosing some secret knowledge as a teaser and credibility builder, while also asserting amazing existing and proposed devices and processes that the artisan-engineers would build for the prince if he were to take on the supplicant.

In some other cases, artisan-engineers did publish *techné* writings, but these were often as much public advertisements of their skills and talents as any real disclosure of valuable know-how or proto-scientific knowledge.¹⁴¹ And like their counterparts—the alchemists and secret knowledge societies that occasionally published writings—these artisan-engineers obscured whatever true substantive disclosure may have been contained in these “open” *techné* writings by means of codes and symbols known only to secret-society initiates.¹⁴² In this way, the chapter of one such society in a given city could use openly “published” writings, which were then distributable in a limited number of manuscript copies, to communicate knowledge to chapters in other cities. This is not so dissimilar to encrypted communications on the internet today. Rare exceptions were authors like Theodosius, whose *On Divers Arts* was expressly a public “tell all” of “secret” arts for the glory of God and altruistic enlightenment of fellow men.¹⁴³ Interestingly, even this stance was soon sometimes co-opted by those who were really only selectively disclosing—and essentially advertising their skills for private patronage and hire—but who were discovering, even before the printing press was fully embraced, that there could be some money made in an increasingly literate Europe from well-promoted manuscript copies.¹⁴⁴

Crucially, during this period, the state did *not* sanction any kind of routine coercive or even violent extraction of valuable artisanal or commercial know-how. And this was in an era that seemed to revel in sadistic torture for other purposes (so much so that today the word “medieval” is often used as shorthand for these kinds of activities). To be clear, the state did torture, or otherwise forcibly coerce, enemies with valuable information of all kinds to extract that information. And major advances in critical useful arts have been disseminated by one army conquering another and obtaining the knowledge from prisoners. For instance, the Franks under Charles Martel were able to obtain both exemplars of (and possibly know-how for) the use of stirrups by Muslim cavalry after the Franks’ surprising victory at the Battle of Tours in 732 CE (a turning point

¹⁴⁰ See *id.* at 141–42.

¹⁴¹ See *id.*

¹⁴² See LONG, *supra* note 6, at 110.

¹⁴³ See *id.* at 85.

¹⁴⁴ See *id.* at 142.

of Muslim expansion into Europe).¹⁴⁵ Likewise, Chinese soldiers, who were captured by Muslim forces in their defeat of the Tang army at the Battle of Talas in 751 CE during the Chinese encroachment westward into Central Asia, “imported” the art of papermaking.¹⁴⁶ Tradition holds that the Muslims had a practice of freeing any prisoners who could teach ten Muslims a valuable art of skill; this practice resembles how importation patents would later be used in Northern Europe, especially England, to establish particular useful arts not yet available there by enticing foreign masters to come in, set up shop, and train local apprentices.¹⁴⁷ But inside a kingdom or empire, the state tortured and extracted information from regular citizens only for alleged crimes or public heresies, treason, plots, and the like.¹⁴⁸ This corresponds to the previous claim that it was *published* views—whether done in print or orally—that gave rise to such liability. The state did not forcibly extract or punish citizens for *private* views, unless they were part of a conspiracy or plot.

Thus, by inference of the foregoing, combined with the fact that the state allowed private (i.e., unpublished) arts to be maintained as a secret, strongly supports that in the normal course, society treated citizens’ artisanal and other knowledge as proprietary. And in many guild-state structures such information was intentionally and enforceably proprietary by law, with serious punishments for unauthorized disclosure.¹⁴⁹ These, of course, are the roots of trade secrets law itself. And while the “property” at issue here was not traditional tangible chattels or land, beginning in the Renaissance and expanding into the Early Modern and then Enlightenment periods, many commentators began asserting that intangible expressions and know-how were even *more* fundamentally “property” than external tangible things *because* they were internal to the individual and not external.¹⁵⁰ We will call this “internal proprietary knowledge” to distinguish it from externally disclosed knowledge as well as internal but nonproprietary knowledge. It would seem significantly *more* offensive and violent to forcibly extract a man’s innermost, unexpressed thoughts, talents, and skills or know-how, than to forcibly take his chattels or land. This is the argument that key Enlightenment figures, including French

¹⁴⁵ See FRANCES GIES & JOSEPH GIES, CATHEDRAL, FORGE, AND WATERWHEEL: TECHNOLOGY AND INVENTION IN THE MIDDLE AGES 55–57 (1st HarperPerennial ed. 1995).

¹⁴⁶ See JIM AL-KHALILI, THE HOUSE OF WISDOM: HOW ARABIC SCIENCE SAVED ANCIENT KNOWLEDGE AND GAVE US THE RENAISSANCE 43 (2010); PHILIP B. MEGGS, A HISTORY OF GRAPHIC DESIGN 60 (2d ed. 1992).

¹⁴⁷ See AL-KHALILI, *supra* note 146; Sichelman & O’Connor, *supra* note 4, at 1280.

¹⁴⁸ See *Medieval Torture*, MEDIEVAL WARFARE, <https://perma.cc/2QFC-ATWP>.

¹⁴⁹ See, e.g., Sichelman & O’Connor, *supra* note 4, at 1272.

¹⁵⁰ See, e.g., Denis Diderot, *Letter on the Book Trade* (1763), reprinted in 131 DAEDALUS 48, 54 (Arthur Goldhammer trans., 2002).

philosopher Diderot, tried to get across in their advocacy for literary, artistic, and craft property.¹⁵¹ Today scholars often seem to wildly misunderstand, misconstrue, or simply ignore this argument.

The dilemma is that, just as Diderot suggested, one can simultaneously view internal states as the most fundamental “property” that should be given absolute protection *and* wish that they were disclosed publicly so that others could benefit from them. In Part II, this Article addresses how copyright and patent law emerged from exactly this state of affairs and sentiment as an innovative solution that has largely stood the test of time—even as it introduced a *second* kind of state-created “deed” property in the process. But first, this Part concludes by summarizing the proprietary nature of these internal things and showing how such an approach—legally and colloquially—remains present to this day.

There can be significant value in know-how, ideas, and other methods, not to mention in literary, scientific-philosophical, or artistic expressions. But contrary to some modern thinking, this value can often be realized through either self-exploitation—especially of valuable know-how—or careful, limited disclosure to others, which can generally be enforced under the law. However, it is likely essential to such enforceable secrecy that the discloser employ what Professor Eric Claeys refers to as property “claim-marking” or “claim-communication”: clear statements, markings, or other indicia that the knowledge or skills were proprietary and confidential.¹⁵² This allows sharing beyond the originator without necessarily surrendering claims and control of the information to the public generally. To be clear also, the public disclosure and widespread sharing of such things—again especially know-how—can diminish the value for the originator or holder, notwithstanding all the now standard references to Thomas Jefferson’s taper sharing its light with others at no cost to itself.¹⁵³

An example illustrates the foregoing. In a hunter-gatherer society, if you know where the good berries or game are, it behooves you to keep this secret, or at least only share with your close family, kin, or social group

¹⁵¹ See, e.g., *id.*

¹⁵² See Eric R. Claeys, *Intellectual Usufructs: Trade Secrets, Hot News, and the Usufructuary Paradigm at Common Law*, in *INTELLECTUAL PROPERTY AND THE COMMON LAW* 404, 421–23 (Shyamkrishna Balganes, ed., 2013); Eric R. Claeys, *Intellectual Property and Practical Reason*, 9 *JURISPRUDENCE* 251, 259 n.34 (2018); Eric R. Claeys, *Labor, Exclusion, and Flourishing in Property Law*, 95 *N.C. L. REV.* 413, 440–41 (2017).

¹⁵³ Jefferson’s writing on this is often misunderstood and of little actual relevance to the development of the US patent system because other than a short stint reviewing patent applications as Secretary of State, he was not involved in drafting either the earlier IP Clause included in the Constitution or any of the patent acts passed beginning in 1790. See Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent “Privilege” in Historical Context*, 92 *CORNELL L. REV.* 953, 960–61 (2007).

(depending on how generous the resource is and how many people it can reasonably sustain). It is, of course, a variant on the classic tragedy of the commons account of property. In small, especially kinship-based societies, there are natural incentives and rewards for sharing knowledge.¹⁵⁴ This seems deeply ingrained in humans and largely seems to explain the results that some modern IP empirical scholars are finding: inclinations and perhaps even biases among a population toward sharing (information, food, and otherwise). The sharing individual may benefit close family or other kin, which is consistent with evolutionary biology constructs, among other common-sense explanations.¹⁵⁵

Perhaps equally important, the sharing individual will incur the clear psychological incentives and rewards in sharing where attribution and credit—and hence social standing, among other things—will be more or less automatically and universally bestowed. Sharing of valuable knowledge can also be in reciprocity for knowledge, goods, land, or services of others.¹⁵⁶ Thus, small, relatively close-knit societies—where most everyone knows everyone else—incentivize and reward informally, but powerfully, the sharing of internal proprietary knowledge, expression, ideas, and know-how. The problem, which is the starting point in Part II of this Article, is that as societies urbanize and grow larger, these informal mechanisms become largely ineffective.

To conclude Part I, a myriad of sources, from Professor William Robinson's 1890 treatise on patents¹⁵⁷ to modern trade secret law (including the seemingly unrelated norms and laws against forcible extraction of information or skills from law-abiding citizens), suggest that society still very much believes in the existence and protection of internal proprietary knowledge and other intangibles. Robinson's central theme was that classic common law (including property, torts, and contracts) could build patent law and rights to inventions by itself and did not require positive statutory law from legislatures.¹⁵⁸ But this system only works if there is internal proprietary knowledge that can be protected from involuntary disclosure in the first instance, and likewise with regard to the right of first publication that continues to suffuse modern copyright law.

One can understand trade secret law—though it is often carefully delineated from being about “property” per se—when one sees it as a means to allow individuals to protect *proprietary information* from unauthorized

¹⁵⁴ See *Human Characteristics: Social Life*, THE SMITHSONIAN INST. HUMAN ORIGINS PROGRAM, <https://perma.cc/M2RN-T6J2>.

¹⁵⁵ See *id.*

¹⁵⁶ See *id.*

¹⁵⁷ 1 WILLIAM C. ROBINSON, *THE LAW OF PATENTS FOR USEFUL INVENTIONS* (1890).

¹⁵⁸ *Id.* at v.

disclosure and misappropriation. Further, the law of (inchoate) ideas, which provides other avenues of protection against misappropriation—perhaps even of raw ideas under certain circumstances—goes even further in this direction. Leveraging from this core insight, the originator of such internal proprietary knowledge can also share it with others, while maintaining overall control and exclusivity within the sharing group, provided there is clear claim-marking or communication to the recipients (and possibly consent on the recipients' part to such restrictions).

Accordingly, the first kind of property in patents and copyrights is this internal proprietary knowledge. And while this Article does not articulate it in terms of the standard tests of propertyness—such as alienability—it is not hard to do so. One can look at the many licenses or assignments of trade secrets, inventions, and manuscripts, or consider the right of first publication itself. One can also contemplate how creators say “that’s mine” even if there is no known law protecting that sort of thing (and regardless of whether it was registered under an IP-type law), or even if, most of the time, creators are perfectly willing to share the thing with attribution and “credit.”

II. State-Issued Property Title Deeds, Charters, or Concessions to Incent “Publication” in the Form of Public Disclosure and Use

If the innovations and expressions flowing from internal proprietary knowledge described in Part I in fact lie behind natural-law intuitions supporting IP—at least in the form of patents and copyrights—then the state-issued title deeds discussed here in Part II are likely what regulatory law proponents focus on as IP. Such deeds would not exist but for the sovereign or other acknowledged authority. And thus, the sovereign can largely determine the how, why, when, and where of their existence and scope. This means that, as a brute, practical, political matter, the sovereign may take into account natural law, utilitarian, consequentialist, or other rationales for granting deeds, limited only by the sovereign’s authority to use such perspectives in the general exercise of its powers. While this Article delves into a summary of the history of these types of deeds, it is important to note at the outset that the modern trend has been toward rights- or entitlement-based deeds of limited term and express attributes of property, such as alienability. This may seem obvious, but it has not always been so.

It is also important to note that natural law perspectives on IP are not limited to private or internal knowledge as property. Classic Lockean property theory is both a natural rights justification and has been invoked to support statutory exclusive rights for writings and inventions even after they are made public. Recent scholarship by natural law proponents such

as Professor Claeys ground Lockean labor theory in a rich account of (intellectual) property as key to human flourishing and not just as labor reward.¹⁵⁹

Part I of this Article left off, chronologically, with the mid-fifteenth century, so here Part II picks up. Across Europe, a mix of guild-regulated economies in republics (like the Venetian Republic) and monarch-governed economies in kingdoms (like England) gave an early “multiple laboratories” backdrop to experiments in guiding the expanding artisan-engineer development of ingenious machines and devices, as well as the emerging print industry.¹⁶⁰ At the time, it was southern Europe that had most of the artisanal production and trade power, with Italian republic city-states—including Venice, Florence, and Milan—dominant in developing new devices, machines, architecture, visual arts, and commercial capitalism.¹⁶¹ In northern Europe, Flanders was flourishing in trade and artisanal production, especially in the cloth market.¹⁶² The kingdoms in Spain, France, and England had military might, but a mixed record of innovation, production, and trade.¹⁶³

As such, England, for example, was largely a “net importer” of artisanal talent and needed to find ways to lure skilled artisans to a backwards land with comparatively bad weather.¹⁶⁴ In the 1300s, and perhaps earlier, England’s sovereigns undertook programs to increase artisanal know-how and production.¹⁶⁵ These programs often centered on grants of exclusive rights, tax incentives, and housing—the standard list of incentives often still employed today.¹⁶⁶

The orders authorizing particular grants under these programs were issued on the open rolls of monarchial grants. This was in contrast to the closed or sealed rolls of orders and grants. Thus, the public nature of the incentive grants is underscored. Grants issued on the open rolls were called *litterae patentis* (“letters patent”)—*patentes* here meaning simply “open” or “clear.” Rights or privileges that could be granted by the Crown under the royal prerogative powers that remained after the limitations of Magna Carta were discretionary to the Crown—meaning that any or no reason could be given for their disbursement. In this way, the terms

¹⁵⁹ See sources cited *supra* note 152.

¹⁶⁰ See Sichelman & O’Connor, *supra* note 4, at 1269–70.

¹⁶¹ See Carlo Marco Belfanti, *Guilds, Patents, and the Circulation of Technical Knowledge: Northern Italy During the Early Modern Age*, 45 *TECH. & CULTURE* 569, 588 (2004).

¹⁶² PIRENNE, *supra* note 131, at 59–67.

¹⁶³ See Robert C. Allen, *Progress and Poverty in Early Modern Europe*, 56 *ECON. HIST. REV.* 411, 414–15 (2003).

¹⁶⁴ See Sichelman & O’Connor, *supra* note 4, at 1280.

¹⁶⁵ See P. J. Federico, *Origin and Early History of Patents*, 11 *J. PAT. OFF. SOC’Y* 292, 293 (1929).

¹⁶⁶ See *id.*

“letters patent,” or simply “patents,” originally signified a much wider range of grants than the exclusive rights for inventions that we use the term for today.¹⁶⁷

This Article adopts the convention of calling these early English grants “importation patents,” as they were primarily used to give exclusive rights and other privileges to artisans who would emigrate with expertise in existing arts from other lands.¹⁶⁸ This distinguishes them from the later “invention patents,” which were given for truly or absolutely (not just locally) novel inventions.¹⁶⁹ The early importation patents tended to be highly personal grants—meaning they were not transferable or alienable—that required training locals in the art in order to establish it in the kingdom.¹⁷⁰ Even if the original artisan left or died, local Britons could carry on the craft.¹⁷¹ As such, these were not yet the kind of alienable, entitlement deeds that constitute modern patents (or copyrights).

The successful northern Italian city-states, however, had different problems. While they sought talented immigrants as well, it was easier to convince such individuals to move—especially from less illustrious and prosperous places—to the Italian city-states without extensive state incentives. But talented artisan-engineers already within these cities were increasingly finding themselves outside of the guilds they needed to be a member of in order to produce or practice a particular invention they had just developed.¹⁷² This could be for at least two reasons. First, the guild may have denied artisans’ membership to the guild. This could have been for personal or family reasons, or for failing to have secured or completed an apprenticeship or the journeyman and masterpiece prerequisites for membership.¹⁷³ At least these issues were to a degree merit-based. But less so, and hence more problematic, was the general prohibition in city-states such as Venice on a foreigner joining a local guild, even if he were fully qualified by a guild in his hometown.¹⁷⁴ Hence, even a talented and skilled artisan who had moved to a new city-state often could not get admitted to the relevant local guild, and was thus precluded from practicing his

¹⁶⁷ See CHRISTINE MACLEOD, *INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM, 1660–1800* at 10–19 (1988).

¹⁶⁸ See Sichelman & O’Connor, *supra* note 4, at 1280.

¹⁶⁹ *See id.*

¹⁷⁰ *See* Federico, *supra* note 165, at 298.

¹⁷¹ *See id.*

¹⁷² *See* Belfanti, *supra* note 161, at 571.

¹⁷³ *See* S. R. Epstein, *Craft Guilds, Apprenticeship, and Technological Change in Preindustrial Europe*, 58 J. ECON. HIST. 684, 690–91 (1998).

¹⁷⁴ *See* Sichelman & O’Connor, *supra* note 4, at 1273.

craft, because many places like Venice were completely regulated economies.¹⁷⁵

Second, as machines, devices, and buildings became more complex—consider the Gothic cathedrals rising across Europe from the thirteenth century onwards across Europe—a new class of designer-builders emerged. This class could do everything from architectural design to engineering, to acting as an early version of a general contractor, to oversee all of the (literally) moving parts.¹⁷⁶ While many, if not all, of these individuals had started in a particular guild, as they expanded their portfolios across multiple guild fields—say beyond a membership in the stonemasons guild to overseeing or engaging in metalwork too—they found themselves required to join other guilds or else run afoul of rules prohibiting unauthorized practice of the various arts, crafts, trades, and professions.¹⁷⁷ The designer-builder for something as complex as a cathedral was effectively overseeing *every* art and craft.¹⁷⁸ But there was a practical limit on how many guilds one person could be qualified to join, not to mention the time it took to be part of multiple guilds. Accordingly, something would soon need to give in the guild regulatory structure, otherwise this practice would hopelessly delay complex projects and innovations.

Enter Filippo Brunelleschi, a masterful and innovative artisan-engineer best known for both designing the Duomo on the Florence cathedral and overseeing its construction.¹⁷⁹ Beyond the Duomo, Brunelleschi also invented and built many ingenious devices and machines to assist in building cathedrals, such as new lifts, pulleys, and elevators.¹⁸⁰ As such, he crossed many guild expertise and authority lines. He himself had come up through the goldsmith and fine metals guild, and probably joined at least one other guild.¹⁸¹ But he was also threatened and briefly jailed for overseeing work in guilds that he had refused to join, including those of the stoneworkers and woodworkers.¹⁸² These problems with crossing guild lines seem to have eventually smoothed over through some kind of special dispensations, which did not in and of themselves signal a general loosening of the guild regulatory structure at that time.¹⁸³

But more centrally to this Article's narrative, Brunelleschi sought and was granted what appears to be the first true invention patent—at least

¹⁷⁵ See *id.* at 1269.

¹⁷⁶ See, e.g., LONG, *supra* note 6, at 129.

¹⁷⁷ See *id.* at 96–97; Epstein, *supra* note 173, at 688–93.

¹⁷⁸ See, e.g., LONG, *supra* note 6, at 229–234.

¹⁷⁹ See, e.g., *id.* at 96–100.

¹⁸⁰ *Id.* at 96.

¹⁸¹ *Id.*

¹⁸² *Id.* at 96–97.

¹⁸³ See *id.* at 96–100.

the first for which documentary evidence exists.¹⁸⁴ Alleging to have designed and built an entirely new kind of boat—*Il Baldone* (the “Monster”)—to transport heavy materials such as marble, he petitioned the ruling council of Florence to give him exclusive rights.¹⁸⁵ This is notable for multiple reasons. First, Brunelleschi did not provide any real description of the boat, nor did he make any attempt to discuss and delineate the actual invention.¹⁸⁶ Second, and most critically, he had no incentive to create or invent. Brunelleschi had already designed and built the boat. The issue for him was that using it on the river would allow anyone to see it, and apparently, anyone would be able to replicate its ingenuity.¹⁸⁷ Thus, Brunelleschi was in a bind—use the boat in public and lose secrecy and proprietary position, or suppress it until he could find some way to disguise the innovative components. His innovative petition created a third way. It requested the council to give him exclusivity for *any new boat* on the Arno for the next three years as if he were a temporary guild of one.¹⁸⁸ It appeared that the Venetians had already developed this narrow guild approach for their version of importation patents.¹⁸⁹

Crucially for the purposes of this Article, Brunelleschi made a natural law argument for the council to grant his petition.¹⁹⁰ The boat was the “fruit” of his ingenuity and mental labor and thus should be his exclusive property, just as a woodworker’s chair or table is his property.¹⁹¹ This far anticipated English philosopher John Locke’s labor theory of property, but it was not rooted solely—or even primarily—in reward for *labor* itself (physical or mental). Rather, Brunelleschi was making what this Article identifies in Part I as the internal-proprietary-knowledge argument. The design of this boat was his internal creation and he had a right to keep it private as long as he wanted—including embodiments to the extent they

¹⁸⁴ See Prager, *supra* note 5, at 129–30.

¹⁸⁵ See LONG, *supra* note 6, at 97.

¹⁸⁶ See *id.*

¹⁸⁷ See *id.*

¹⁸⁸ *Id.*

¹⁸⁹ For example, in 1416 a foreigner who possessed a new device for felting wool (“fulling”), an art then done by hand or with limited hand tools only, was granted a fifty-year exclusive and transferable right and license to practice fulling with this device. See Sichelman & O’Connor, *supra* note 4, at 1276; see also LONG, *supra* note 6, at 94. As a foreigner, he would not have been able to join the existing guild, but because the council found that his device produced better results than did the existing hand fullers, they seemed to treat it as a new art. See Sichelman & O’Connor, *supra* note 4, at 1276–77. The hand fullers continued their craft, presumably with exclusivity as to that practice, but could not use the new device. See LONG, *supra* note 6, at 94. The foreigner could use his device exclusively, but presumably would not be allowed to full by hand, until or unless he joined the fullers’ guild. See *id.*

¹⁹⁰ See *id.* at 97.

¹⁹¹ *Id.*

could be made and used privately—but it would benefit him, and the state, if he could use it publicly. Yet, upon such use, the invention would be “published” (made public) and he could not prevent anyone from copying and using it, which diminished its value to him. The creative proposal was for the state to give him exclusivity, as any other artisan might get for importing or introducing a desired art or invention into the state. Here of course, the state did not even know what the design was, much less whether the state would find it desirable. Therefore, Brunelleschi had to sell it aggressively, reminding the council of his genius and success to date and asserting that this was better than anything else he had created.¹⁹² As an extra sweetener, he suggested that being awarded an exclusive grant this time might allow or encourage him to come up with further amazing inventions in the future.¹⁹³ It was this extra fillip that likely played a role in the much later “incentive to create” mythical rationale for patents. The council was persuaded and took a chance by awarding an exclusive grant for three years.¹⁹⁴ They were promptly rewarded by the boat’s sinking on its first voyage and Brunelleschi’s never coming up with a replacement or many new ideas, for that matter.¹⁹⁵

Whether Florence was discouraged from issuing any more of these exclusive grants for untested innovation by the fate of *Il Baldone*—it sank on its maiden voyage—or for other reasons, it was Venice that took the lead as the primary origin point of modern patent systems.¹⁹⁶ But while many of the commentators who know of Venice’s role at all pin the story to the 1474 Venetian “Patent Act,” the Republic had been issuing many such exclusive grants for decades, if not a full century, before then.¹⁹⁷ Thus, Brunelleschi’s Florence grant may not be the first of its kind. But because many key records for the Venetian administrative state from the fifteenth century were lost or destroyed,¹⁹⁸ it is hard to say with any kind of certainty. Regardless, enough documented grants from Venice do remain in the record from before the 1474 Act to say with confidence that the Republic was issuing grants for both locally and absolutely novel inventions (among other exclusive-rights grants for arts and trade) before this legislation.¹⁹⁹ In this way, the Act was similar to modern US congressional general public laws displacing or regularizing a prior practice of private bill

¹⁹² See *id.*

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ See LONG, *supra* note 6, at 97.

¹⁹⁶ See Sichelman & O’Connor, *supra* note 4, at 1268.

¹⁹⁷ See *id.* at 1274–76.

¹⁹⁸ *Id.* at 1277.

¹⁹⁹ *Id.* at 1276–77.

and agency license or rights grants. The Venetian Senate could continue issuing exclusive grants with any terms and conditions they wanted, but the Proveditori di Comun administrative agency—which before then had granted exclusives with a range of terms—henceforth could issue grants only under its sole authority that complied with the “standard” terms set out in the 1474 Act.²⁰⁰ The point is that not only had Venice established a fairly active practice of issuing “patents” in the fifteenth century, but it also appears to be the first to standardize it into a fixed administrative process—a kind of early “patent office” and procedure.

This was a fairly dramatic pivot from the tightly regulated and obsessively policed exclusivity and secrecy of the Venetian guilds that had been increasing since the twelfth century. Why the change? The answer is unclear. But governments of various European industrial, commercial, and military powerhouses were becoming concerned about near total control of the “means of innovation” by guilds and other private actors.²⁰¹ Governments saw guilds as particularly problematic, finding that those institutions were not producing enough innovation, or at least not keeping up with foreign competitors.²⁰² Circumstantially, this seemed to have been a concern for Venice, which had just lost a military conflict with Milan, in part because of the military hardware superiority of the Milanese.²⁰³ This shook the confidence of Venetian leadership in the vaunted Arsenal, which the world perceived as an unmatched innovation and production powerhouse.²⁰⁴ At the same time, the various European governments recognized that the strict membership and art or trade exclusivity (depending on the nature of a particular guild) of the administrative guild system was preventing individuals with promising innovative devices, machines, or processes from developing and producing them.

Thus, in crucial part, the Venetian patent system started to grant a special *license* to persons outside a relevant guild to practice that art in a limited capacity tied directly to their innovations, and not exclusive rights initially.²⁰⁵ But this likely would not have been that effective as a practical matter because the economic and social power of the guilds would block any commercial production, use, and/or distribution of the innovative product or process. The modern sense of anticompetition law principles and rules is, in some ways, the complete inverse of the Venetian legal

²⁰⁰ *Id.* at 1276–78.

²⁰¹ See, e.g., *id.* at 1278–81. For the idea of “means of innovation,” see Sean M. O’Connor, *Methodology and the Means of Innovation* 2 (2018) (unpublished manuscript) (on file with author).

²⁰² See Sichelman & O’Connor, *supra* note 4, at 1278–80.

²⁰³ See PETER PURTON, *A HISTORY OF THE LATE MEDIEVAL SIEGE 1200–1500* at 231–33, 280 (2010).

²⁰⁴ See GERARD J. TELLIS & STAV ROSENZWEIG, *HOW TRANSFORMATIVE INNOVATIONS SHAPED THE RISE OF NATIONS: FROM ANCIENT ROME TO MODERN AMERICA* 128, 142 (2018).

²⁰⁵ See Sichelman & O’Connor, *supra* note 4, at 1268–69.

system. In Venice, the whole point was that a designated guild would have absolute monopolistic control of any particular art or trade.²⁰⁶ The state severely punished those who violated this purpose not just by fines, but by imprisonment, exile, corporal punishment, and even death.²⁰⁷ So the state's grant of a mere nonexclusive *license* to a non-guild member was fairly revolutionary in itself. But when this was not enough to truly permit the non-guild member to effectively produce or practice the invention, the state seems to have turned to an *exclusive*-rights grant for that invention, similar to the grant made in 1416 for the locally novel fulling device.²⁰⁸

The Venetian government also seems to have used some of these grants as a kind of public works contracting. The grants' specific terms required that grantees build, install, and operate a certain number of the devices or machines.²⁰⁹ The government gave provisional exclusive grants for the grantee to develop and demonstrate a working prototype by a certain date for an *experientia* that the Provveditori di Comun or other granting agency would conduct.²¹⁰ If the committee members of the granting agency were satisfied that the prototype was sufficient, then they would make the grant permanent for its set term, and the grantee would proceed to build and operate the requisite number of units.²¹¹ This practice of using private contractors to take on the risk and responsibility for developing, installing, and operating important public works projects dated all the way back to the Roman Empire, where the state usually practiced this through the creation of the *societates publicanorum*, who issued an early kind of tradeable securities on semi-public markets and held exclusive rights or concessions for the works.²¹²

Finally, and perhaps most importantly, these grants were a means to get innovators to put into operation innovations that could not be maintained as secrets when used in public. This is the relevance of the Brunelleschi story. Operating some inventions means using them in open places such as piazzas, roads, or rivers where others can freely observe them. If the innovation of the device or machine is fairly obvious or can be derived from such observation, then under the secrecy system of the time, the

²⁰⁶ See *id.*

²⁰⁷ See *id.* at 1272.

²⁰⁸ *Id.* at 1276–78.

²⁰⁹ See, e.g., *id.* at 1274 (detailing the Grand Council's grants for building public-works-related mills and machines beginning in the thirteenth century).

²¹⁰ See LONG, *supra* note 6, at 94–95.

²¹¹ See *id.*

²¹² See Ulrike Malmendier, *Roman Shares*, in THE ORIGINS OF VALUE: THE FINANCIAL INNOVATIONS THAT CREATED MODERN CAPITAL MARKETS 31, 32–33 (William N. Goetzmann & K. Geert Rouwenhorst eds., 2005); see also Ulrike Malmendier, *Law and Finance "at the Origin,"* 47 J. ECON. LITERATURE 1076, 1084–86 (2009).

inventor would be effectively “publishing” his invention and therefore would lose the substantial ability to profit from not only his ingenuity, but also his physical and mental labor.

Equally important, the continuing explosive growth of economic powerhouses like Venice meant that any social or kin rewards or incentives that an inventor might have to share freely her invention in a small, closely knit society had long been removed. It would take a much more impressive and broader altruism than most inventors possessed to incline an inventor to publish a valuable invention in the dense urban centers of Renaissance Europe. It could, of course, happen, and has happened even recently. But in many cases, if not most, the inventors who freely and openly published had some other steady means of income (e.g., a university professorship) or were financially independent (e.g., holding property or other investments that generated enough money to support them).²¹³

As Brunelleschi’s petition and grant also show, these early “patents” were often as much focused on proclaiming the greatness of the inventor—giving a kind of public and official *attribution* that inventors coveted for social standing, prestige, and future income purposes—as they were about meaningful, direct economic benefits. In soliciting additional projects, artisan-engineers could use such public proclamations as evidence of their skill and talent, much in the way they were using limited production copies of *techné* writings, as previously mentioned. Perhaps most importantly for the state, the *societates publicanorum* style of outsourcing risk and responsibility for both public and private innovative works meant that this mechanism—and the resultant works—was nearly cost free for the state! Pure genius.

The fifteenth century was also when the renowned Johannes Gutenberg developed and put into operation the print press.²¹⁴ While it was not the first print press in general terms, its movable type, its malleable “matrix” of soft metal type blocks, and its limited bleed ink were revolutionary and allowed the longstanding general idea of printing—until then largely implemented by cut woodblock printing—to be harnessed in a new highly efficient and flexible manner.²¹⁵ Printers could put together a new typeset daily, or even hourly, without high artisanal skill or labor-intensive woodblock cutting, and the semi-automated adapted olive press system allowed fewer semi-skilled men to produce far more printed sheets per hour or day than those working with cut or etched woodblocks by hand. Notably, German printmaker Albrecht Durer would combine the two processes to

²¹³ For example, Galileo Galilei held a professorship during the period in which he developed his telescope and patented water pump. See P. J. Federico, *Galileo’s Patent*, 8 J. PAT. OFF. SOC’Y 576, 576–77 (1926).

²¹⁴ See Sean M. O’Connor, *The Lost “Art” of the Patent System*, 2015 U. ILL. L. REV. 1397, 1411 (2015).

²¹⁵ See *id.* at 1411 n.108.

churn out high numbers of his artistic prints in order to tap into the expanding middle class market for mid-priced art and luxury goods.²¹⁶ And, of course, Gutenberg's own print versions of the Bible and a few other key works had shown the potential of this middle class market before Durer. The presses were initially treated largely as any other innovative devices or machines. As the legal innovation of "patents"—whether for locally or absolutely novel things—spread across Europe, localities were issuing "printer patents" for those skilled in the art and with the wherewithal to build and operate a press to have exclusive rights to do so. Soon presses were operating in all major and most midsized cities.²¹⁷ Once one or more local presses were established, no one needed additional printer patents and the practice faded as presses suffused Europe.

But the presses created a new issue. The economics were obviously slanted towards a kind of early mass production of printed materials, which would then be best profited from by mass distribution (at least on a relative scale for the time). The best way to do this was unconditional or unrestricted sales of the printed copies. But this meant that a work printed and distributed this way was *de facto*, if not *de jure*, "published" with all the risks attendant to the author. While the first things off the presses tended to be long-since published works, such as the Bible or works from antiquity with no attributed author (or a long dead one), there was soon the obvious interest in printing and a market for buying newer works by living authors.²¹⁸ To be clear, authorizing a print run of one's work did *not* of itself constitute publication, but to prevent publication upon distribution of these copies, one had to ensure that they were distributed under restrictive covenants, conditions, or other agreements in private transactions.²¹⁹ This did in fact occur, and as late as the nineteenth century there have been famous "private" print runs of works that authors enforced as private and unpublished.²²⁰ The norm of course quickly became printing and unconditionally selling copies as far and wide as possible.

The new economic and promotional possibilities of the print medium enticed authors, but authors also became chary of the risks and *de facto* publication that authorizing a work for print would carry. *Authors did not all immediately rush to print their works.*²²¹ This is hard to imagine in today's all-press-is-good-press and share-our-innermost-thoughts-and-hot-takes-with-the-world culture. But it was very different then, when one's

²¹⁶ See *id.* at 1412.

²¹⁷ See George Parker Winship, PRINTING IN THE FIFTEENTH CENTURY 103, 115 (1940).

²¹⁸ See O'Connor, *supra* note 214, at 1411.

²¹⁹ See, e.g., Andrew Pettegree, THE BOOK IN THE RENAISSANCE 40–42 (2010).

²²⁰ See, e.g., *Albert v. Strange* (1849) 64 Eng. Rep. 293, 320–21 (EWHC Ch).

²²¹ See LONG, *supra* note 6, at 102–42; see also R. H. MARTIN, FROM MANUSCRIPT TO PRINT (2010).

life was often casually at risk for a public statement, even one taken out of context. Thus, manuscript culture did not immediately and quickly decline in the century or two after widespread availability of presses.²²² In fact, manuscript culture arguably only declined because of first, the legal innovation of copyright, and then later, the rise of early free speech rights (i.e., limiting state punishments for public statements).

By the end of the fifteenth century, then, society moved toward a new practice of granting exclusive rights or privileges to print and distribute *particular works* in various jurisdictions. In 1479, the Bishop of Würzburg commissioned local printers with the exclusive right to edit and print the breviary of his diocese.²²³ Historian Elizabeth Armstrong opines that “[t]his was a valuable monopoly” because the book “would be required by all the clergy [across the] large diocese.”²²⁴ Whether these episcopal privileges were truly the first or not, secular rulers also used the same legal mechanism in the same period.²²⁵ For example, in 1481, the Duke of Milan granted a six-year exclusive privilege to Antonius Zarottus and his partners, referred to as “publishers” but who seemed to also be the printers themselves.²²⁶ The exclusive privilege the Duke granted was for Johannes Simonetta’s *Sforziad*, a history celebrating the Duke’s Sforza family, which the Duke recognized as being printed under his encouragement.²²⁷ The Duke likely paid Simonetta to write the book, although the historical record is not clear. The Duke might have provided monetary payment or patronage, or perhaps Simonetta was already a client or affiliated with the

²²² See James A. Dewar, *The Information Age and the Printing Press: Looking Backward to See Ahead*, RAND CORP., <https://perma.cc/72M8-869X>.

²²³ See ELIZABETH ARMSTRONG, BEFORE COPYRIGHT: THE FRENCH BOOK-PRIVILEGE SYSTEM 1498–1526 3 (1990); NEIL WEINSTOCK NETANEL, FROM MAIMONIDES TO MICROSOFT: THE JEWISH LAW OF COPYRIGHT SINCE THE BIRTH OF PRINT 16 (2016).

²²⁴ ARMSTRONG, *supra* note 223, at 3. This speculation is buttressed by another exclusive privilege that the Duke issued in 1484, this time to Petro Justino da Tolentino for “the *Convivio* and other works by Francesco Filelfo, for five years, with a fine of 100 ducats for infringement.” *Id.* When the Duke was informed that Zarottus and a partner were already also printing *Convivio*, he ordered that they not even put their edition on sale until Petro Justino’s privileged edition was sold out. *Id.* To put a point on it, the restriction lasted not until Petro Justino’s exclusive term ended, but rather until the edition sold out (although presumably if the copies were not all sold by the end of the five-year term itself, then Zarottus and others could print and sell copies barring any further grants or restrictions from the Duke). See *id.* The object of these grants was further underscored when, in 1489, King Ferdinand I of Naples issued an exclusive privilege to the publisher and printer of Robertus Caracciolus’ collected sermons, *Orationes de sanctis*, that would continue until the edition of 2000 copies was sold out. See *id.* at 4; see also NETANEL, *supra* note 223, at 16–17.

²²⁵ See, e.g., NETANEL, *supra* note 223, at 16.

²²⁶ *Id.*

²²⁷ See ARMSTRONG, *supra* note 223, at 3; NETANEL, *supra* note 223, at 16. A fuller title of the book is *Rerum Gestarum Francisci Sfortiae*. NETANEL, *supra* note 223, at 16 n.7.

Duke. But what is clear is that the privilege prohibited anyone else from printing copies of the book, or importing copies that might have been printed elsewhere, within the Duke's domains.²²⁸ The edition run consisted of 400 copies, and Armstrong conjectures that the six-year term was decided as the likely period within which most or all of the copies could be sold.²²⁹

During this same period, the first documented exclusive privileges to *authors*—rather than printers—appeared in Italy. In 1486, Venice's ruling council, the Collegio, issued an exclusive privilege to Marcus Antonius Coccius Sabellicus for his history of the city and Republic, *Rerum venetarum ab urbe condita opus*.²³⁰ Similar to the Venetian "patents" discussed above, the grant to Sabellicus was both license and exclusivity—permission to have the book printed by a printer of his own choice at the printer's expense, and a prohibition against anyone else reprinting the book in any of Venice's territories.²³¹ The penalty for infringement was 500 ducats.²³² Many may have perceived this arrangement as yet another public works project fitting within two lineages: (1) mechanical works commissioned through exclusive grants; and (2) historical works commissioned by nobles to "document" the illustrious nature of themselves and their forebears.

A third category of innovative privileges in this century went to designers of new typefaces.²³³ Venice granted a twenty-year exclusive to Aldus Manutius in 1496 for all Greek texts he would print—publish with his new typeface. It then granted to Ottaviano Petrucci a twenty-year exclusive in 1498 for all printing with his new type for "figured song," a form of evolving musical notation.²³⁴ The text of the grant makes clear that Petrucci's grant was primarily for a new art and/or manufacture and not for music qua music—and certainly not for original music compositions, as Petrucci was acting as an inventor and not a musician in these endeavors.²³⁵ The grant also gave him exclusive rights for "tablatures for organ or lute" and added a new limit on imports presumably to close a loophole.²³⁶

²²⁸ ARMSTRONG, *supra* note 223, at 3.

²²⁹ *Id.*

²³⁰ *Id.* at 3–4; NETANEL, *supra* note 223, at 16; Joanna Kostylo, *Commentary on Marco Antonio Sabellico's Printing Privilege (1486)*, PRIMARY SOURCES ON COPYRIGHT (1450–1900) (2008), <https://perma.cc/8HKM-WK2R>. Variants on the author's name include Marcantonio Cocci Sabellico and Marco Antonio Sabellico. Alternate titles of the work include *Decades Rerum Venetarum*.

²³¹ ARMSTRONG, *supra* note 223, at 3–4.

²³² *Id.* at 4.

²³³ See NETANEL, *supra* note 223, at 17.

²³⁴ *Id.*

²³⁵ See *Ottaviano Petrucci's Music Patent, Venice (1498)*, translated in PRIMARY SOURCES ON COPYRIGHT (1450–1900), <https://perma.cc/9XSS-3NEK>.

²³⁶ *Id.*

The grant also included a new twist on the core “fruits of labor” justification, mentioning that Petrucci had “invented what many, not only in Italy but also outside of Italy, have long attempted in vain, which is to print, most conveniently, Figured Music.”²³⁷

By the turn of the century, Venice had regularized the practice of issuing exclusive book privileges—just as it had regularized the related practice of issuing exclusives for new arts or machines by the time of the 1474 Act—and this practice expanded beyond Italy to Spain, France, and the Papal States.²³⁸ In Spain, the administrative council under King Ferdinand and Queen Isabella granted exclusive printing and vending privileges to Dr. Juliano Gutiérrez, physician to the monarchs, for his book on treating gallstones, *De la cura de la piedra*, in 1498.²³⁹ The published book contained a notice at the end stating the privilege and the further mandate that the price per copy was fixed at seventy-five *maravedís*.²⁴⁰ Thus, contrary to a modern view by some, most European centers had no “golden age” at the outset of printing in which anyone could print anything at any time.²⁴¹ For example, Ferdinand and Isabella issued an edict in 1502 mandating a review and license by specified authorities before any book could be printed, or foreign-printed book sold, within the realm.²⁴² In France, a five-year privilege was granted in 1498 to one of the persons involved in preparing and printing a commentary on Avicenna’s *Canon*, although in her recount, Armstrong does not clearly specify to whom.²⁴³ Dr. Jacques Ponceau, the *premier médecin* of King Charles VIII, “entrusted” the work to the press of Johann Treschel in Lyon, but the commentary itself was written by Dr. Jacques Despars or De Partibus, even though it was the author of the preface, Janus Lascaris, who paraphrased the terms of the privilege (presumably in said preface).²⁴⁴ Details on Papal privileges before 1500 are scant, but secular leaders granted them occasionally from the time of Pope Sixtus IV, who remained as pope until his death in 1484.²⁴⁵

²³⁷ *Id.*

²³⁸ See ARMSTRONG, *supra* note 223, at 6–7; NETANEL, *supra* note 223, at 17. Netanel states that the Papal States issued book privileges before 1500, but it is not clear what grant he refers to and none are included in *Primary Sources on Copyright* for this period.

²³⁹ ARMSTRONG, *supra* note 223, at 7.

²⁴⁰ *Id.*

²⁴¹ See generally *id.* at 1–8 (discussing the regulations, privileges, and monopolies in the early days of printing in various European countries).

²⁴² See *Licensing Rules, Madrid (1502)*, translated in PRIMARY SOURCES ON COPYRIGHT (1450–1900), <https://perma.cc/5JCD-ZKHM>.

²⁴³ ARMSTRONG, *supra* note 223, at 7.

²⁴⁴ See *id.*

²⁴⁵ See *id.* at 12.

What this historical survey conveys is that by the end of the century, a number of jurisdictions had established the practice of granting exclusive privileges for new arts, machines, manufactures, and publications.²⁴⁶ Notably, for instance, England had also been a leader in new arts privileges. England seems to have conceptualized grants in a few ways that were derivative of existing legal and governance mechanisms. First, the new arts and even some device grants seemed primarily conceived as *sui generis* or limited member “guilds.”²⁴⁷ Second, other device grants had a public works contract or concession dimension.²⁴⁸ Third, and not really addressed in the literature so far, the print run grants and some new device grants were likely cousins to the exclusive privileges and charters that states had been giving to exploratory trade voyages.

The next issue is how these exclusive grants became propertized title deeds that could be freely assignable. The Venetian “Patent Act” itself contemplated permitted licenses from grantees to others.²⁴⁹ So at the outset of these exclusive grants, they were not construed as so personal that no one else could operate under them. It is less clear whether the exclusive grants provided express permission—or even prohibition—of complete assignments or transfers of all the rights and privileges. The pastiche of exclusive rights and privileges grants for inventions, books, and typefaces across Europe and into the British Isles during the fifteenth century likely had a range of alienability. These were most probably set out on a case-by-case basis and would have been written into the grant itself (permitting or prohibiting).

However, the new private “copy right” system established by the printer-publiishers of the Stationers Company in London would change this in the next century. Many commentators believe that the development of the printing press led to the formation of the Stationers Company as a response to the need to censor the fusillade of printed works coming out of the British presses, but this belief is incorrect. Rather, the Corporation of London set up the Stationers Company in 1403 as a guild to support and regulate copywriters, illustrators, bookbinders, booksellers, and

²⁴⁶ See generally *id.* at 1–8 (discussing the privileges granted by various European countries in the early days of printing).

²⁴⁷ See, e.g., JOSEPH P. WARD, METROPOLITAN COMMUNITIES: TRADE GUILDS, IDENTITY, AND CHANGE IN EARLY MODERN LONDON 1–6 (1997) (discussing the trade guilds in sixteenth-century London); Federico, *supra* note 165, at 292–96 (discussing the formation of merchant and craft guilds in England in the early years of the second millennium CE).

²⁴⁸ See Federico, *supra* note 165, at 292 (discussing how the licenses from English kings granting exclusive privileges were articulated in letters addressed to the public).

²⁴⁹ *Venetian Statute on Industrial Brevets, Venice (1474)*, translated in PRIMARY SOURCES ON COPYRIGHT (1450–1900), <https://perma.cc/WT3C-YW3R>.

the sale of writing materials *for the manuscript culture and book industry*.²⁵⁰ Notably, this occurred *before* Gutenberg had developed his press later in the century.²⁵¹ There was a robust market for manuscript books, especially around universities. Many universities in fact had their own stationers' companies and functions for hand-copying books for faculty and student purchase and use.²⁵² Thus, it was not just the monasteries where scribes were turning out page after page of hand-copied works. Accordingly, when printing presses and their operators came to England later, they were placed into the Stationers Company.²⁵³

Key to the internal operations of the Company—like for any other art or craft guild of the time—was regulation of the “coopetition” of its members. Think of craft guilds as something between a modern limited liability partnership of lawyers and a cooperative association of food vendors in a shared food court. Each lawyer or vendor has his own clients or customers and in many cases is actually competing against his colleagues to retain those clients or customers. But the lawyers and vendors also jointly manage and share many resources and, in the case of the market, set the overall terms and conditions for operation and access to the market. There are invariably conflicts over customers, clients, and resources, and so the partnership or co-op has to have mechanisms to allocate and enforce claims to these things amongst the partners or members.

The Stationers' Company developed a system of “copy rights,” which was the obvious descriptive term for what they were.²⁵⁴ A particular “publisher”—who could either be intending to copy and distribute in manuscript or print (once printing had been introduced to England)—would have purchased or licensed the original “copy” of a new work from its author.²⁵⁵ Also contrary to the position of many commentators, authors were not simply giving their manuscripts to publishers for free or for minimal sums. Instead, as Professor Rebecca Schoff Curtin has documented, publishers and authors were negotiating and executing fairly sophisticated

²⁵⁰ See Ian Gadd, *The Stationers' Company*, THE STATIONERS' COMPANY ARCHIVE, 1554–2007, <https://perma.cc/5NBW-U48A>.

²⁵¹ Gutenberg established his press operations in Mainz in the 1440s. HANNAM, *supra* note 79, at 209. Thus, the Stationers Company had been in operation as a formal guild for forty years and had roots reaching back into the 1300s. And with printing not arriving in England until 1476, Gadd, *supra* note 250, the Stationers Company had been a formal guild of text writers, illuminators of manuscript books, booksellers, bookbinders, and suppliers of parchment, pens, and paper for seventy years before any printers joined it.

²⁵² See GRANT, *supra* note 79, at 51–53. See generally PEDERSEN, *supra* note 19, at chs. 5–6, 122–88.

²⁵³ See Gadd, *supra* note 250.

²⁵⁴ Rebecca Schoff Curtin, *The Transactional Origins of Authors' Copyright*, 40 COLUM. J.L. & ARTS 175, 176 (2016).

²⁵⁵ See *id.* at 178.

royalty structured assignments or licenses to the work, and the work was identified as the “copy” (perhaps in the same way we use the term “copy writer” today and “copy” for what those writers produce).²⁵⁶

But before the Crown or Parliament issued any exclusive rights or privileges to authors (or to publishers, for that matter), what was being conveyed in these publication agreements? The answer seems to be the internal proprietary knowledge described in Part I, which the author expressed in a particular form. Further, the exclusive grants to publishers issued in England and across the European continent often noted the publisher’s expense to secure this very conveyance from the author.²⁵⁷ Accordingly, the internal proprietary knowledge type of property in copyright not only demonstrably existed in the legal system from before modern statutes, but was also the central element of relations between authors and publishers long before the Statute of Anne first gave some rights and roles to the author in the later public statutory “copyright” system.²⁵⁸ Thus, in the Stationers’ Company, members had claims to copies that they had secured from authors, estates, or elsewhere, and by the sixteenth century the Company required that these were “registered” in a central book held by the Company, so that all could objectively know who had what claims.²⁵⁹

An important background condition of this system was that the Company, as a London livery company form of guild, had the *exclusive* rights and privileges to engage in the book trade in the City of London (as formed by the City, similarly to how the Republic of Venice established exclusive guilds within its borders).²⁶⁰ The City of London, like many other municipalities then, and even now, was much earlier established as its *own* corporation, controlling everything within its borders that was not preempted by the Crown or Parliament.²⁶¹ The City of London is in fact still a municipal corporation.²⁶² Accordingly, whatever *private* allocation arrangements were established privately inside the Company were—like those of any other similarly situated guild—*de facto public* arrangements for the City. Thus, the internal “copy right” and registration system of the Company was the *de facto* copy right and registration system of the City and its entire book trade.

²⁵⁶ See *id.* at 182–98.

²⁵⁷ See *id.* at 182–83.

²⁵⁸ Statute of Anne 1710, 8 Ann., c. 19 (Eng.).

²⁵⁹ *Id.*

²⁶⁰ See Gadd, *supra* note 250; see also *What Is a Livery Company?*, THE WORSHIPFUL COMPANY OF LORINERS, <https://perma.cc/LT6B-TW8V>; *Introduction to the Company*, THE STATIONERS’ COMPANY, <https://perma.cc/HVH5-QESZ>.

²⁶¹ *The City’s Government*, CITY OF LONDON, <https://perma.cc/AV9P-MV7V>.

²⁶² See *About the City Corporation*, CITY OF LONDON, <https://perma.cc/4W5M-GUNX>.

When Queen Mary then granted a *royal* charter to the Company in 1557, the main difference was that this extended the Company's exclusive control of the book trade beyond the City of London to the Kingdom of England and its dominions.²⁶³ But it did not change the internal copy right and registration system. Commentators have repeatedly and mistakenly asserted that Queen Mary *created* the Company through her charter, and that, because she seemed to have some interest in using the Company as a censoring mechanism, the Company was *primarily* established for this purpose.²⁶⁴ Instead, to the degree censorship power was important to Queen Mary, co-opting the Company would have been a clever political device. The Company already existed for other purposes and had shown it could control and support a robust book trade in the City.²⁶⁵ If this model were expanded to cover the entire Kingdom and dominions, then the Company would have had exclusive control over production and distribution of books kingdom-wide. And because the Company had this expanded reach only because of royal charter, the Crown could put pressure on it to only allow production and distribution of books that the Crown approved. But more central to the purposes of this Article is the fact that members could, and often did, trade the registered copy rights within the Company.²⁶⁶ The publisher who brought one in may have subsequently decided he did not want to print, publish, and promote it after all. But a fellow member who was interested in the copy right might also hold a title that the first publisher was more interested in. In this manner, members devised an internal market for copy rights within the Stationers' Company.

On the patent side, things were less clear until later in the sixteenth century when again England unintentionally led the creation of a market for charters and patents (in the broad "patent roll" prerogative grant sense).²⁶⁷ While some prerogative patents and charters from the Crown may have been nontransferable or strictly personal by their own terms, others were clearly not. There is evidence of trading in all manner of patents—for manufacturing, trades, trade routes, and indeed chartered companies themselves—that seems loosely correlated with the expansion of the use of the prerogative by Henry VIII, and especially by Elizabeth I,

²⁶³ See *Stationers' Charter, London (1557)*, PRIMARY SOURCES ON COPYRIGHT (1450–1900), <https://perma.cc/W44N-VQMY>; see also Ronan Deazley, *Commentary on the Stationers' Royal Charter (1557)*, PRIMARY SOURCES ON COPYRIGHT (1450–1900), <https://perma.cc/6L4S-AWXJ>.

²⁶⁴ See Deazley, *supra* note 263.

²⁶⁵ See Gadd, *supra* note 250.

²⁶⁶ See LYMAN RAY PATTERSON, COPYRIGHT IN HISTORICAL PERSPECTIVE 5 (1968); MARK ROSE, AUTHORS AND OWNERS: THE INVENTION OF COPYRIGHT 12 (1993).

²⁶⁷ See HAROLD G. FOX, MONOPOLIES AND PATENTS: A STUDY OF THE HISTORY AND FUTURE OF THE PATENT MONOPOLY 27–28, 57–85 (1947).

Mary, James, and Charles. While many of these grants may have had legitimate purposes, some recognized that, especially since Elizabeth, they were simply revenue raising and political favoritism devices.²⁶⁸

Deemed “monopolies,” these grants were increasingly scrutinized. Those that gave exclusive rights to an already existing art, manufacture, or trade practiced in the realm were singled out with opprobrium as “odious” monopolies.²⁶⁹ The most egregious were those where the grantee had no particular skill or experience in the field, such as with Lord D’Arcy and his infamous monopoly grant of manufacturing playing cards.²⁷⁰ Lord Coke, however, would have restricted the term “monopoly” only to these grants that took something commonly available or practiced and restricted it to one person’s or group’s exclusive control. By contrast, grants for locally or absolutely novel arts or manufactures, or for new trade routes, should not be deemed monopolies at all—much less odious ones—but simply as patents.²⁷¹

The Crown granting what even Coke would define as (odious) monopolies was arguably a necessary political expedient to raise crucial revenues and manage a restless and ever-threatening baronial aristocracy. Handing out such political favors was part of an overall strategic plan to manage the Kingdoms for the overall common good.²⁷² An ancillary argument is that the people complaining about these odious monopolies may have been exaggerating, and in fact the complaints could have emanated primarily from a few loud aristocratic voices of those who were unhappy with being left out of the political largesse. But whatever the arguments, the relevant point is that as patents became untethered from any necessary personal attributes of the grantee (other than perhaps holding crucial political support), there was no need for them to be inalienable or personal to that individual. This was even clearer for trading company charters, which were grants for formation of a corporation whose membership was expected to change over time. There is clear evidence of many grantees transferring these charters from at least the late seventeenth century.²⁷³

The 1624 Statute of Monopolies intended to rein in the perceived abuses of the prerogative patent system.²⁷⁴ While often claimed to have restricted patent grants going forward to only new manufactures, in fact, the statute’s full text reveals that exclusive grants could continue to all

²⁶⁸ See *id.* at 74.

²⁶⁹ *Id.* at 76.

²⁷⁰ See *id.* at 215–16.

²⁷¹ See *id.*

²⁷² See *id.* at 165–66.

²⁷³ See, e.g., Katharina Pistor et al., *The Evolution of Corporate Law: A Cross-Country Comparison*, 23 U. PA. J. INT’L ECON. L. 791, 806–07 (2002).

²⁷⁴ See FOX, *supra* note 267, at 114–15.

manner of corporations.²⁷⁵ Viewed properly, the statute did not provide a blanket prohibition of patent grant monopolies with a narrow exception for new manufacturers, but rather, it provided a much narrower prohibition targeting political-favoritism grants to individuals who had no particular attributes or skills for the existing art, manufacture, or trade they were being given exclusive rights and privileges over. And this makes sense, because that was exactly the political problem that Parliament was trying to fix. The government could give companies exclusive control over existing arts, manufactures, and trades, because this was consistent with the guild system in the first place. (Admittedly, guilds were much less powerful in England than they were on the European continent, but they still existed.) And this allowed for regulation and ordered advancement of important fields.²⁷⁶ Again, the relevance of the debates surrounding this historical incident is that the government issued patents and charters for many things, and those grants could often be bought and sold.

By the mid-seventeenth century, the conflict between Crown and Parliament in England reached its zenith with the English Civil War.²⁷⁷ By the end of the century, things had settled down following the Restoration and the compromise of a constitutional monarchy (which exists to this day).²⁷⁸ But there was some residual conflict relevant for the purposes of this Article—the Crown and Parliament continued to wrangle over who had (superior) authority to grant corporate charters.²⁷⁹ It was clear that the Crown retained granting authority for new manufacturing patents, but this did not tell the whole story for exclusive economic rights grants without considering corporate and trade route charters as well.²⁸⁰ But the trend that continued was viewing and acting on these many patents and charters as fully alienable and property-like.

The culmination of this long arc for government rights and privileges grants to deeded titles was arguably the entitlement-based patent and copyright systems that the US Congress created in 1790 under the Constitution's "IP Clause."²⁸¹ It was not the IP Clause itself that permitted this creation—important as that was—because the Clause merely gave Congress the *discretionary* power "[t]o promote the Progress of Science and

²⁷⁵ See *id.* at 340.

²⁷⁶ See *id.* at 35.

²⁷⁷ See CONRAD RUSSELL, *THE CRISIS OF PARLIAMENTS: ENGLISH HISTORY 1509–1660*, at 353–59 (1971).

²⁷⁸ See *id.* at 361–97; *The Role of the Monarchy*, THE ROYAL HOUSEHOLD, <https://perma.cc/WEU6-CSVF>.

²⁷⁹ See FOX, *supra* note 267, at 153–54.

²⁸⁰ See *id.* at 220.

²⁸¹ See U.S. CONST. art. I, § 8, cl. 8.

useful Arts” through exclusive rights grants to authors and inventors.²⁸² Congress could have acted on this enumerated power in any number of ways. Upon its first session in 1789, it received eighteen petitions for private bills granting exclusive rights to writings or inventions.²⁸³ For some, Congress created committees to review the petitions and appeared ready to issue private bills if the writings or inventions, respectively, were deemed worthy.²⁸⁴ These would have been effectively distant cousins to the original Venetian Senate personal grants from before (and after) the 1474 Act. However, the flood of applicants appears to have persuaded Congress to enact a general law providing for a separate administrative process for considering and granting such exclusive rights.²⁸⁵ While a combined bill was originally considered, separate copyright and patent statutes were ultimately enacted in 1790.²⁸⁶

Crucially, Congress made the copyrights and patents authorized under these statutes and successor statutes *entitlements*, rather than grants of discretion at the hands of the agents and agencies empowered to grant rights under these IP laws.²⁸⁷ Nineteenth-century court decisions confirmed this.²⁸⁸ Inventors and authors in the United States have the *right* to have the relevant federal agency issue this *title deed* granting the rights set out in the relevant statute in effect at the time.²⁸⁹ The agency may not refuse to do so *other* than for specific bases given in the agency’s enabling statute.²⁹⁰ Thus, so long as the inventor or author meets the statutory

²⁸² *Id.*

²⁸³ See EDWARD C. WALTERSCHEID, THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE 118–19 (2000). See generally *Proceedings in Congress During the Years 1789 and 1790, Relating to the First Patent and Copyright Laws*, 22 J. PAT. OFF. SOC’Y 243 (1940).

²⁸⁴ WALTERSCHEID, *supra* note 283, at 118–19.

²⁸⁵ *Id.*

²⁸⁶ *Id.*

²⁸⁷ See Sean M. O’Connor, *Taking, Tort, or Crown Right?: The Confused Early History of Government Patent Policy*, 12 J. MARSHALL REV. INTELL. PROP. L. 145, 158–68 (2012).

²⁸⁸ See, e.g., *United States v. Palmer*, 128 U.S. 262, 270 (1888); *James v. Campbell*, 104 U.S. 356, 358 (1881); *United States v. Burns*, 79 U.S. (12 Wall.) 246, 252 (1870); *McKeever v. United States (McKeever Case)*, 14 Ct. Cl. 396, 421 (1878).

²⁸⁹ For purposes here, “federal agency” includes the modern Copyright Office, which is technically part of the Library of Congress, itself part of Congress. Some thus would not call the Copyright Office a “federal agency” in the sense of an agency of the executive branch, which is sometimes deemed the “federal government.” But of course, Congress is, in a general sense, a component of the federal government (particularly when contrasted with state governments).

²⁹⁰ See *supra* note 288; *In re Seely*, 21 F. Cas. 1016, 1018 (C.C.D.C. 1853) (No. 12,632) (“[I]f the commissioner shall deem it sufficiently useful and important, it is his duty to issue a patent therefor . . .”).

requirements for a patent or a copyright, then the agency must issue the title deed.²⁹¹

An issued patent or registered copyright requires, or is predicated on, publication of the invention or the work, as applicable.²⁹² Thus, any internal, proprietary knowledge property claims that the inventor or author may have had before publication have generally been given up. And that is exactly the point. The primary purpose of patent and copyright statutory deed systems is to incentivize not *creation* or *invention*, but *publication*—the move from purely private control and use to public disclosure and use. The internal proprietary knowledge private rights supported by the most fundamental of natural law and ethics principles (so long as the proprietor makes reasonable efforts to keep the invention or writing secret) can be voluntarily traded for the public rights of government issued title deeds. Which, in turn, may have been constructed according to regulatory, utilitarian, consequentialist, or most any other legitimate political or legal approaches.

Thus, the proper state to understand the context of the two sets of rights is one of internal proprietary knowledge, private possession, and use by individuals, who must then have some sufficient motivation to publicly or broadly share it. In small, closely knit societies, this motivation is simply to help an intimate kinship of social circles for the good of all. It is part of being an integral member of such a community, and one's standing in the group may well be measured by one's willingness to share in this manner. There is likely express or implied reciprocity at play as well. But in larger, urbanized and depersonalized societies, this social and kinship sharing motivation breaks down, as there is no intimate connection to many of those whom the sharing would help. Further, people are less likely to engage in reciprocity, especially with those a person does not even know. This of course is exacerbated by the fact that attribution breaks down as ideas and innovations are communicated to those whom the author or inventor did not know personally.

The kind of property right issued by the state, crucially, is the deed or registration and any codified information or expression it contains. While the internal proprietary knowledge form of property can be either codified or simply tacit know-how, deeded or registered patents and copyrights represent property in the deed itself. The deed can be transferred or sold. Its owner may then have enforceable legal rights, but the object of

²⁹¹ Copyrights are “registered” under the Copyright Act, without the sort of examination process that is used to grant a patent. Thus, some would argue that the issued patent is more in the line of a title deed than is the mere registration of a copyright. There is some merit in this, but the practical payout is that the federal patent and the federal copyright are expressly conveyable with property attributes and carry with them certain defined rights just as any title deed does.

²⁹² See Melville B. Nimmer, *Copyright Publication*, 56 COLUM. L. REV. 185, 185 (1956).

those rights—such as patented machines or copyrighted songs—are not the property. This is likely what Professor Fritz Machlup meant in his influential 1958 report on the patent system when he pointed out that “it is almost embarrassing how often the controversial idea of a property right in *invention* is confused with the noncontroversial idea of a patent right in a *patent*.”²⁹³ As discussed in Part III, the objects of the copyright or patent rights may have their own personal or chattel property rights, but they are not property via the deeded or registered patent or copyright. At the same time, the codified knowledge or expression included in the deed or registration is part of the property as well. In this way, statutory deeded patent and copyright rights are about information and not about objects or processes in the physical world.

Part II of this Article documents the history behind state-issued title deeds and describes how the sovereign set their existence and scope. The purpose of these statutory deed systems is to incentivize publication in the form of public disclosure and use. While this indeed has some flavor of regulatory property, the system emerged because of the natural law rights to internal proprietary knowledge and skills, whether kept to the originator or shared carefully with a limited set of recipients under satisfactory claim communications terms to maintain control and secrecy. The next Part considers a third category of IP-related property: chattel or personal property rights in physical or digital artifacts embodying IP rights.

III. Property in Physical or Digital Things Embodying Intellectual Property

Much of the value of ingenious devices or machines, and of texts or performative art resides in their replicability so that more than one person can use them at a time. Today, this holds true for visual arts as well, even though in the not-so-distant past these were seen as primarily one-off artifacts. Further, many of the manufactures, machines, and other tangible artifacts of today are really embedded methods.²⁹⁴ For example, a pharmaceutical drug is not that valuable simply as a physical object; its value lies in being administered to a patient in a certain way to produce a therapeutic effect. Thus, the drug is just one part of a broader therapeutic method.

As early exclusive rights and privileges grants evolved from their fifteenth-century origins, they became reconceptualized as covering *intellectual* property—although first as literary property and as “inventions” or “discoveries” as applicable. This separated the embedded process and

²⁹³ STAFF OF S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 53 (Comm. Print 1958) (Fritz Machlup, Dept. of Pol. Econ., Johns Hopkins U.).

²⁹⁴ O'Connor, *supra* note 201, at 11.

intangible expression from any particular physical instantiation or “embodiment.” Thus, from twin roots of exclusive state concessions on the one hand—such as Brunelleschi’s “all new boats on the Arno”—and specific public works installations on the other—Venetian grants for, say, three new water pumps to help keep the perpetually water-logged city dry—the intangible, but importantly definite and concrete, notion of the “invention” or the “discovery” sprouted. Likewise, a particular kind of expression became the subject of copyright, regardless of how it was in fact copied.

This had two important results. First, people no longer considered an original copy of a copyrightable work—say, a manuscript or a prototype of a patentable invention—to be coextensive with the copyright or patent. Ownership of these tangible things as personal property or chattel did not necessarily determine ownership of the new deeded titles. Second, over time people viewed additional copies of the work or the invention as having their own chattel title that could be distinguished from the deeded title of “copyright” or “patent.”

But the transition to this modern state of affairs was rocky, with significant confusion, or at least interim legal states along the way. Expanding on an example introduced in Part II, in the early stages of the Stationers’ Company’s private copyrights, some viewed a particular print run *in toto* as the subject of the copyright.²⁹⁵ Exclusivity might last until the print run was sold out, regardless of how quickly that happened. In fact, authors sometimes granted the rights to print in this limited manner.²⁹⁶ Over time, people started to call this a right to “publish” as well. In a guild-controlled book trade where no one but guild members had rights to produce or sell books, the sense of publishing as committing something to the public that the author then lost control of was diminished.²⁹⁷ Authors may have become more comfortable publishing their works because they did not give up all control of the work. This was especially true where the printer or publisher had to come back to the author to get rights to produce a second or later print run by the term of the original print or publication contract.

A second example of the uneven path towards IP embodiments having their own separate chattel titles is that of patented articles of manufacture and machines under early antebellum US patent law. As Professor Adam Mossoff has shown, Justice Joseph Story and others viewed these physical embodiments as part of the property of the patent title itself, and not as separately titled chattel that happened to be merely restricted in

²⁹⁵ See Curtin, *supra* note 254, at 182–88.

²⁹⁶ See *id.* at 186–87.

²⁹⁷ See *id.* at 183–84.

production or use by the patent deed.²⁹⁸ This was further justified because patents were valid only for novel things, so there was no restraint of trade or odious monopoly involved where the patentee, or his assignee or licensee, conveyed the objects under restrictive conditions, even for “post-sale” or post-conveyance use or resale.²⁹⁹ This view adopted Lord Coke’s sense of “monopoly”—as a legal term of art—as meaning only instances where the state took something back from the public that it previously had (most relevantly, when exclusive rights were given to a few individuals for a commodity or commercial trade that the public freely used or practiced before).³⁰⁰ Thus, the newly invented and manufactured articles or machines had no separate existence of title before invention and production by the patentee, and accordingly, the whole lot of individual embodiments was considered part of the property of the patent title deed.³⁰¹ However, this would change under Chief Justice Roger Taney’s clever creation of new law, which would ultimately lead to exhaustion doctrine in the late nineteenth century.³⁰²

By the end of the nineteenth century, American and European jurisdictions generally treated physical embodiments of copyrighted works or patented inventions as individuals’ own separately titled chattel, albeit property which might be restricted as to original manufacture, distribution, or use by the relevant copyright or patent.³⁰³ Such treatment was still compatible with allowing conditioned sales or leases that retained controls over usage or resale of the good after conveyance.³⁰⁴ But this separate, yet restricted, chattel title is often overlooked as a category of property in IP. In some cases, the deeded patents or copyrights are mistakenly collapsed into the embodiments, as if the separate patent or copyright title has no existence distinct from the physical artifacts. In other cases, the embodiments are thought to be “owned” directly through the patent or copyright. The latter is often behind the concerns over patenting of inventions encompassing all or part of a human, as if the patent conveys ownership of living persons. Instead, physical objects or beings are either separately titled or, in the case of humans, “own” themselves, distinct from

²⁹⁸ See Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 351–52 (2009).

²⁹⁹ See Sean M. O’Connor, *The Damaging Myth of Patent Exhaustion*, 28 TEXAS I.P.L.J. (forthcoming 2020) (on file with author); *Origins of Patent Exhaustion: Jacksonian Politics, “Patent Farming,” and the Basis of the Bargain* 49 (Univ. of Wa. Sch. of Law Legal Studies Research Working Paper No. 2017-05), <https://perma.cc/6KE5-84CV>.

³⁰⁰ See *id.* at 58–60.

³⁰¹ See *id.* at 12–13.

³⁰² See *id.* at 24–27.

³⁰³ See *id.* at 49.

³⁰⁴ See *id.* at 65–66.

any relevant patent or copyright. In IP classes, this distinction is often illustrated through the separation of title in a painting and a copyright covering it. Ownership of the copyright does not control ownership of the physical painting.

The status of title to digital “goods” raises interesting questions. The topic is too vast to be covered in detail here, but summary points can be made. The baseline is that other than when physical media is conveyed with an embedded digital code or object, no one may convey the actual digital artifact in and of itself.³⁰⁵ Instead, in a simplified account of a highly technical operation:

- (1) a machine makes a copy of the digital artifact that resides on some physical media that person A owns;
- (2) this copy is then manipulable in active memory of person A’s machine; and
- (3) the machine causes a new copy of that object to be reproduced on another piece of physical media—either by directly connecting it to the machine or by sending appropriate digital electronic signals or packets through the internet (or a local network)—that can then be accessed by another machine, which will essentially construct the digital artifact anew from the directions or code in the transmitted information onto physical media possessed by the recipient.

This means that person A is not conveying a single physical thing (and its title), which is the basis for first sale or exhaustion. Yet new copies are continually being made, which technically requires a license from the copyright owner.

Courts have employed this logic to its extreme, such as in the landmark case *MAI Systems Corp. v. Peak Computer, Inc.*,³⁰⁶ a 1993 decision from the US Court of Appeals for the Ninth Circuit.³⁰⁷ Section 117 of the Copyright Act already provided that those who had purchased a lawful copy of software had the right to make such copies as were created “as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner.”³⁰⁸ But the question was

³⁰⁵ See O’Connor, *supra* note 299, at 67–68.

³⁰⁶ 991 F.2d 511 (9th Cir. 1993), *cert. dismissed*, 510 U.S. 1033 (1994).

³⁰⁷ *Id.* at 511.

³⁰⁸ 17 U.S.C. § 117(a)(1) (2012).

whether this extended to others, such as computer technicians or repairmen, who might have had to load up the software into active memory.³⁰⁹ The Ninth Circuit affirmed the lower court's finding of copyright infringement on the basis that someone indeed made a copy when turning the computer on and loading the operating system in question.³¹⁰ Because the owner of the copy was not the one to actually do this, the Ninth Circuit held that it did not fall within Section 117 of the Copyright Act.³¹¹ More troublingly, the Ninth Circuit interpreted "owner" of a copy to exclude users who obtained software under end-user licenses, which is how the vast majority of software vendors structure software "purchases."³¹²

Software vendors long ago settled on the "lease-license" model of leasing the physical medium on which the code is embedded and licensing use of that code.³¹³ They implemented this model to avoid any implication that they had sold the master code itself or the copyright protecting it.³¹⁴ This means that they have not triggered the first-sale doctrine, so they cannot resell either the physical media carrying the code or the code as a digital artifact.³¹⁵

While most courts are now comfortable that Section 117 applies to the usual "purchaser" of software who acquires it under the standard lease-license model, this still means that one cannot resell the code or other digital artifact without the permission of the copyright owner.³¹⁶ The result is that a regular resale or secondary market for code or digital content does not exist as it does for print books, vinyl records, CDs, and DVDs. A company named ReDigi sought to create a secondary market based around a proprietary technology that it claimed would ensure that when an owner or licensee of a copy resold the copy, it could be conveyed to the buyer's machine or physical media with no copy left on the seller's machine.³¹⁷ However, when this company's technology and business practice

³⁰⁹ *MAI Sys. Corp.*, 991 F.2d at 518.

³¹⁰ *Id.* at 519.

³¹¹ *See id.* at 517–18. Section 117 has since been amended specifically to allow repairpersons to make such copies as part of diagnostics of repair. *See* 17 U.S.C. § 117(c).

³¹² *MAI Sys. Corp.*, 991 F.2d at 518–19.

³¹³ *See* Sean O'Connor, *The Use of MTAs to Control Commercialization of Stem Cell Diagnostics and Therapeutics*, 21 *BERKELEY TECH. L.J.* 1017, 1019–20 (2006).

³¹⁴ *See, e.g.*, Robert W. Gomulkiewicz, *The License Is the Product: Comments on the Promise of Article 2B for Software and Information Licensing*, 13 *BERKELEY TECH. L.J.* 891, 899 (1998).

³¹⁵ In some cases, vendors do allow the whole package of media and licenses to be sold or transferred, but generally not in any unbundled fashion.

³¹⁶ 17 U.S.C. § 117(b); *see also* BRIAN T. YEH, CONG. RESEARCH SERV., R44590, REPAIR, MODIFICATION, OR RESALE OF SOFTWARE-ENABLED CONSUMER ELECTRONIC DEVICES: COPYRIGHT LAW ISSUES 7 (2016), <https://perma.cc/GBH6-ZB4S>.

³¹⁷ *See* *Capitol Records, LLC v. ReDigi Inc.*, 934 F. Supp. 2d 640, 645 (S.D.N.Y. 2013).

reached the court, ReDigi's counsel made the poor decision to argue that technology was like the Star Trek teleporter or Willy Wonka's WonkaVision and that some mysteriously tangible electronic bits would lift off the seller's hard drive, transport through the internet, and settle down on the recipient's hard drive.³¹⁸ This was both technically wrong and insulting to the judge, who clearly did not enjoy being spoken down to as if he were a dotard.³¹⁹ Even worse for ReDigi, the opposing parties' experts successfully convinced the judge that the ReDigi system did not ensure that the technology properly erased the original copy from ReDigi's server after the transaction.³²⁰ ReDigi's counsel also tried to shoehorn the facts into the cases they cited about technology lifting physical image layers off plaques and other tangible objects and then conveying separately from the underlying base.³²¹ This was too cute and made little headway.

Some commentators are frustrated by the case's outcome and the lack of a digital resale market. They would like for the courts to either bless this bizarre fiction that ReDigi's counsel concocted, or to extend first sale to licenses.³²² Even where one is sympathetic to enabling a digital resale market, the better tack is to first construct a regular pathway for actual sales of copies of digital code or content. This is not impossible, and many of the original concerns of software vendors at the dawn of unbundled software decades ago are simply not real risks anymore.³²³ If one transforms licenses into sales for purposes of then applying first sale, one risks conflating and destroying an important distinction in business models that can benefit consumers as well as vendors with different packages of features and price points. This gets into a larger discussion of the dynamics of business models and first sale or exhaustion that goes beyond the scope of this Article, but it presents a relevant consideration.

The upshot is that digital "goods" do not really exist in any widespread way at the moment. People convey digital code and content under licenses (when transmitted through the internet) or lease-licenses (when conveyed on physical media).³²⁴ Thus, there is effectively no title to any of these copies in the way modern property law gives chattel title for print books, CDs, and DVDs. At the same time, some content owners who still distribute tangible copies sometimes employ lease-license or service models such

³¹⁸ *Id.* at 645, 645 n.2.

³¹⁹ *See id.*

³²⁰ *Id.* at 646 n.3.

³²¹ *Id.* at 650–51.

³²² For the latter in particular, *see, e.g.*, AARON PERZANOWSKI & JASON SCHULTZ, THE END OF OWNERSHIP: PERSONAL PROPERTY IN THE DIGITAL ECONOMY 40–41 (2016).

³²³ For example, that courts would think the sale of a copy of a program was sale of all rights, title, and interest to the code by the vendor to a single user.

³²⁴ *See* O'Connor, *supra* note 299, at 66.

that they do not pass title to the physical copies, so as not to trigger first sale.³²⁵ This can sometimes be controversial, especially when content owners do this in a manner that triggers concerns over antitrust, such as resale price maintenance, or contract formation, such as lack of notice or assent. More recently, businesses have been selling hybrid distribution models, such as Disney's "Combo Packs," which involve its "Movies Anywhere" program in which it conveys physical DVD or Blu-ray discs of the movies, together with a code to access digital copies of the same movies.³²⁶ In the recent case *Disney Enterprises, Inc. v. Redbox Automated Retail, LLC*,³²⁷ one court questioned the ability of Disney to enforce contracts or other mechanisms tying these different media together. This is a fast-moving area of law, as indicated by how recently the court handed down its decision in *Disney Enterprises*. Only time will tell the status of digital "goods" in IP.

IV. Assignable Licenses and Other Intellectual Property Conveyances: Contracts as "Things" and Property

Propertized contracts represent another significant category of property within the broad construct of intellectual property. Arthur A. Leff famously wrote the article *Contract as Thing* in 1970, positing that one should view contracts themselves as what people are really bargaining for and "buying."³²⁸ In other words, rather than being a framing mechanism or legal device external to the deal, the contract *is* the deal. It should be viewed as a, or even "the," thing. And as the thing, it becomes propertized, meaning, for example, that one can alienate (i.e., buy and sell) a contract, like other property. Leff's purpose was different: he wanted to address society's burgeoning use of standardized consumer contracts—so-called "contracts of adhesion"—because they were required "take it or leave it"

³²⁵ See, e.g., Sean M. O'Connor, *IP Transactions as Facilitators of the Globalized Innovation Economy*, in WORKING WITHIN THE BOUNDARIES OF INTELLECTUAL PROPERTY 203, 221 (Rochelle C. Dreyfuss, Harry First, & Diane L. Zimmerman eds., 2010).

³²⁶ Thomas K. Arnold, *Disney Launches Movie Streaming Service*, VARIETY (Feb. 25, 2014, 5:00 AM), <https://perma.cc/LT5C-N3YE>.

³²⁷ No. CV 17-08655 DDP (AGRx), 2018 WL 1942139 (C.D. Cal. Feb 20, 2018).

³²⁸ But when one stands far enough back from the whole deal, from the whole process of goods buying, what one sees is a unitary, purchased bundle, of which the product, say a car, is just the most tangible (and, oddly enough, the *most* mutable) thing. One goes out and acquires the whole 'set' which is a 'deal on a car,' and of the interchangeable subsets (object, extras, contract), it is in fact arguable that the contract is *more* of a 'thing' than the goods which are sold pursuant to it.

Arthur A. Leff, *Contract as Thing*, 19 AM. U. L. REV. 131, 146-47 (1970).

components of acquiring goods or services from many businesses.³²⁹ But to do so, he had to reconceptualize contracts as “things.”

As often happens, theory and academics were far behind practice. People had propertized contracts for decades, if not centuries, by the time Professor Leff wrote his article. Contracts—and the rights and duties they included—had been bought and sold for at least a century, and they were likely recognized as legal instruments ever since.³³⁰ The main limitation simply concerned whether the rights or duties were personal or transferable. In other words, in instances such as hiring the services of a particular talented person, the hiring party does not want that person to be able to delegate his duties to someone else, especially to one who might not be as talented or who will perform differently. But in other situations, such as where the goods or services to be obtained are effectively or actually fungible, the contracting party does not much care if the counter party assigns rights or delegates duties under the contract to someone else, so long as the assignee can deliver the same quality goods or services.³³¹ One longstanding example includes both futures and options contracts. Because they are impersonal legal rights to obtain goods (usually commodities) at a certain price at a future date, parties can generally transfer them. A similar example includes stock options. Markets for these contracts have long existed—this is all that is meant when one references “commodities futures market” or an “options market.”

IP systems have authorized alienable propertized contracts in some situations from their inception as well. The Venetian “Patent Act” of 1474, discussed previously in this Article, allowed for seemingly further transferable licenses.³³² Similarly, parties could generally transfer Stationers’ Company publication contracts within the Company.³³³ And in some cases, parties could even transfer an exclusive rights grant from a sovereign—a mix of title and contract.

The contracts in the robust informal markets in patent assignments and licenses of the nineteenth century in the United States were even more clearly propertized. The supposed origins of patent exhaustion in *Bloomer v. McQuewan*³³⁴ actually involved not the sale of machines as

³²⁹ *Id.* at 140–44.

³³⁰ See Morton J. Horwitz, *The Historical Foundations of Modern Contract Law*, 87 HARV. L. REV. 917, 919 (1974).

³³¹ As a formal matter, contract rights are “assigned” and contract duties are “delegated.” But for simplicity here and tracking the way practicing transactional attorneys speak, I refer to both as “assignment” of the contract.

³³² See Sichelman & O’Connor, *supra* note 4, at 1271.

³³³ See Curtin, *supra* note 254, at 178.

³³⁴ 55 U.S. (14 How.) 539 (1852).

goods, but rather the sale of franchises to build and operate machines.³³⁵ This case, and the earlier cases aggregated as *Wilson v. Rousseau*,³³⁶ reveals a relatively sophisticated and complex set of transactions in assignments and licenses—all existing solely as contracts.³³⁷ Assignments of regional exclusivity—expressly authorized under the patent statute of the time—were routinely bought and sold.³³⁸ Likewise, people repeatedly bought and sold exclusive and nonexclusive licenses to build and operate specified numbers of patented machines in carefully delimited locales.³³⁹ In this way, the assignment or license was itself the “thing” or product that parties bought and sold—very much a kind of property.

Fast forward to the turn of the current century, when commentators such as Robert Gomulkiewicz were characterizing software licenses as the “products.”³⁴⁰ In other words, what software vendors and consumers were really negotiating over and buying were the rights to use certain features of code. This allowed for flexible access to different features at different price points, which became a core business model for mass market software distribution.³⁴¹ In this way, the license really was the product, because software vendors propertized it.

To be clear, IP assignments or licenses can also be characterized as *conveying* property rights too, as Professor Chris Newman has argued.³⁴² In other words, the contract terms operate to vest part or all of the IP property in the assignee or licensee, as applicable. But this is the legal effect of the contract, not the contract as its own legal object. For example, I can sell or assign the IP contract, which would also have the effect of conveying the IP rights included in the contract, but those are two separate legal effects. The distinction is clearer in complex agreements such as the manufacturing contract discussed in the Introduction. Assignment of the contract transfers many more rights and obligations than simply those that constitute whatever IP grants are part of the deal.

In sum, assignment and license contracts created under IP rights are themselves a fourth type of IP property. Unless restricted by their own

³³⁵ See O'Connor, *supra* note 299, at 12.

³³⁶ 45 U.S. (4 How.) 646 (1846).

³³⁷ See O'Connor, *supra* note 299, at 15–16.

³³⁸ See *id.* at 10.

³³⁹ See *id.* See generally Christopher M. Newman, *A License Is Not a “Contract Not to Sue”*: *Disentangling Property and Contract in the Law of Licenses*, 98 IOWA L. REV. 1101 (2013).

³⁴⁰ See Gomulkiewicz, *supra* note 314, at 891.

³⁴¹ See Robert W. Gomulkiewicz, *Getting Serious About User-Friendly Mass Market Licensing for Software*, 12 GEO. MASON L. REV. 687, 690 (2004); Robert W. Gomulkiewicz & Mary L. Williamson, *A Brief Defense of Mass Market Software License Agreements*, 22 RUTGERS COMPUTER & TECH. L.J. 335, 352–66 (1996).

³⁴² See Newman, *supra* note 339, at 1111–12.

terms, by default parties make these contracts fully alienable and buy and sell them often.

Conclusion

This Article unpacked the different kinds of property within the broader construct of “intellectual property.” In doing so, it suggested that the regulatory property and natural law property camps are in many ways talking past each other. Each prioritizes one of the property types in a way that obscures the perspective and arguments of the other. This, then, bolsters their talking points and narrative that IP is, respectively, merely a regulatory grant of the state which can be modified and limited however the legislature or sovereign pleases, or is instead a fundamental natural right or property that trumps all but the most essential limits placed around it. If both camps would develop a wider appreciation for the different kinds of property at play, they might be able to reengage constructively.

At the same time, the new historical account of the origins of patent and copyright law given herein does not of course dictate today’s IP law and policy. And yet ignoring it opens up the risk that we could inadvertently recreate the excessive use of secrecy that arguably hindered progress—in the sense of building off of existing knowledge available in the public sphere—in the time before proto-patents and proto-copyrights emerged in the Renaissance. Robust IP protections, together with appropriate limits on abuses of state-granted exclusive rights, will encourage more creators and innovators to choose the public disclosure and commercialization route. This will be better for society overall as a matter of promoting the progress of science and useful arts, as the US Constitution empowers Congress to do through exclusive rights.

It is long past time for a more constructive dialogue about the different things that make up intellectual property, and for finding a way past the depressingly politicized “min-max” debates. Innovation and creativity—while certainly not unalloyed goods—are nonetheless arguably the most valuable resources we have for human betterment. Understanding how they come about and, perhaps more importantly, how to incentivize those who develop them to transfer the knowledge from their internal or private spheres into the public, will require the IP community to engage in a depoliticized, objective academic inquiry. This Article has made a start of this inquiry; hopefully, more scholars pick up the mantle of objective scholarship and expand it for the betterment of society.

