

SOCIALLY RIVALROUS INFORMATION: OF CANDLES, CODE, AND VIRTUE
by David W. Opderbeck

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I. INTRODUCTION

My hole cards are the Ace of Hearts and the Queen of Hearts. The flop cards are dealt: the Jack of Hearts, the Queen of Spades, and the Two of Hearts. We bet. The turn card is dealt: the ten of Hearts. We bet again. The river card is dealt: the King of Hearts.

Each player knows his or her own hole cards. This information is a form of power. The knowledge that I can play a Royal Flush allows me to pursue an optimal betting strategy, to gauge my risks – to “know when to hold ‘em, know when to fold ‘em, know when to walk away, know when to run.”¹

If I were to disclose the information about my cards to the other players, I would be giving away the power inherent in that information. The information would thereby lose its value to me. Even if I were to share the information with only one other player, it would lose at least some of its value. Therefore, I keep it secret.

Information poker is played out continually in every human economic and social venue. In multifarious contexts ranging from contract negotiations to religion, the ability to control information is a form of power. Francis Bacon’s famous aphorism, *scientia est potentia* seems to be true.

Both the social science literature and the law recognize the power of information. Indeed, one heuristic that could be applied across various legal regimes is the regulation of access to information. The law governing, for example, trade secrets, the sale of

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¹ Kenny Rogers, “The Gambler,” from the album “Lady” (1981).

securities, and contract formation, is centrally concerned with regulating the exchange of information.

Of course, the law governing “hard” intellectual property, particularly patents and copyrights, also is centrally concerned with information. Curiously, however, the way in which intellectual property law treats information seems counterintuitive as applied to information in other areas of the law. Intellectual property theorists tend to view information as a non-rival economic resource, whereas in other areas of the law, information seems to possess characteristics of social rivalry.

The view that information is a non-rival resource is a foundation of modern intellectual property doctrine. It is the sort of thing a knowledgeable person assumes without serious question. But what is the foundation for that foundation?

The model of information as a public good is only a model. It does not supply a complete description of reality. Like other such models, it lacks precise contact with reality. Speaking of non-rival information is much like speaking of perfect competition – it is a useful artifice that enables us to construct certain types of models that can test limited sets of hypotheses.

While it can be useful to model information as a public good, intellectual property theorists seem unconcerned about the limits of such models. We seem to conflate the model with reality. Intellectual property theorists seem to agree that non-rivalry is a property of information as it exists in the universe. *Ontological* claims about information lurk underneath most contemporary intellectual property theory. This paper drills into

that ontological substrate, and finds it wanting as a foundation for information law and policy.

The assumptions about information that underlie contemporary intellectual property policy trace back to three towering figures of the 18th-Century Enlightenment: Isaac Newton, Francis Bacon, and John Locke. The Newton-Bacon-Locke trinity directly informed how the American founders, including early intellectual property theorists such as Thomas Jefferson, thought about information, and supplied the philosophical basis for the U.S. Constitution's intellectual property clause.

Newton gave the founders a mechanistic universe that could be directly and fully described through universal mathematical laws. Bacon supplied a philosophy of science that understood the scientific enterprise as a gradual accumulation of verifiable facts that constitute reality. Locke's epistemology rooted knowledge in the foundation of human reason, and endowed human propositions with the capacity to establish universal, fully translatable truth claims.

Under the Newton-Bacon-Locke trinity, "information" consists of universal propositions that directly describe reality. "Information," then, is essentially synonymous with "Nature." One who knows something knows Nature-as-it-is. Nature-as-it-is is an undivisible given – some resources found in Nature may be used up, but Nature itself simply is. Information, then, cannot be used up – information constitutes the universe itself, and all rational beings have equal access to it.

The Newton-Bacon-Locke trinity, however, has long been superseded by more realistic, indeed even cynical, views about reality and human knowledge. It can be

difficult in the postmodern climate to assert a realist ontology at all, much less the possibility of direct knowledge about Nature. Not only is knowledge power, says Michael Foucault, but power is all there is. At the very least, the social, historical and linguistic conditioning of all human knowledge claims must be acknowledged.

How, then, does the traditional view of information as non-rival persist? Why is information still modeled as a non-congestible property of an external universe? The answer lies with a curious mix of postmodern social theory and mathematical information theory.

An influential strand of postmodern critique of intellectual property is concerned with deconstructing the notion of “authorship.” This critique asserts that intellectual property policy valorizes the “romantic author” or inventor, who historically has been a politically powerful individual.² It argues that a deeper historical perspective on the socially embedded nature of authorship and invention exposes the “romantic author” trope as a mere power play.³

It would seem that a postmodern account of intellectual property would eschew anything resembling Thomas Jefferson’s famous candle: the idea that information is like a flame on a candle that can be freely shared without diminishing the original flame.⁴ Reality is no longer a given; it is constructed. The construction of reality entails the assertion of power, which suggests rivalry. Information constructs and maintains power

² See Section II.B., *infra*.

³ See, e.g., Mario Biagioli & Peter Galison, eds., *SCIENTIFIC AUTHORSHIP: CREDIT AND INTELLECTUAL PROPERTY IN SCIENCE* (Routledge 2003).

⁴ Thomas Jefferson, Letter to Isaac MacPherson, August 13, 1813, in *THE FOUNDER’S CONSTITUTION WEB EDITION* (University of Chicago Press), available at http://press-pubs.uchicago.edu/founders/documents/a1_8_8s12.html (last visited August 8, 2007).

relationships, such that sharing information is a way of sharing – and diminishing – power. Michel Foucault’s power / knowledge paradigm, not Jefferson’s candle, is the result of the postmodern turn.

The curious fact is that much contemporary intellectual property scholarship tries to marry Jefferson and Foucault via Claude Shannon. Shannon’s mathematical information theory, as developed by technology-and-society theorists such as Norbert Wiener, seems to underwrite the Enlightenment project concerning information and its attendant notion of information non-rivalry.

Shannon’s information theory has propped up the Jeffersonian view of information because Shannon showed that information can be stable when communicated across different media. If a communication can be removed from one substrate, compressed into code, transmitted over another substrate, and uncompressed into yet another substrate, with negligible data loss – as is the case in contemporary digital communications networks, such as the Internet, that draw on Shannon’s theories – this suggests that information is something that can be separated from contingencies, isolated and purified.⁵ Moreover, Shannon’s theories suggest that communications channels have highly elastic capacity once information has been encoded. Practical limitations on data carriage are more a function of the capacity of the receiving equipment than of the channel. Therefore, just as many people can light their candles from one flame, many people can share a common channel.

⁵ See Section II.C., *infra*.

Information theory also supports constructivism, however, because code is a mathematical construct that cares nothing about semantic content.⁶ Code does not have to correspond to anything in the external world. Indeed, code can construct an entirely new cyberspace. Controlling code, then, in some spaces, is akin to controlling the “architecture” that governs what is possible in the “real” world. In this way, the “New Chicago School” can conceive of “code” as both an access of regulatory power and a non-rival resource.⁷

There are three significant problems with this fusion of Enlightenment and postmodern ideas about information. First, the romantic author critique has some merit, but its historiography of intellectual property policy is highly selective. In fact, the “romantic author” was important to one strand of Enlightenment thought that resulted in the moral rights intellectual property tradition. The romantic author was rejected, however, by the empiricist strand of Enlightenment thought that led to the American approach to intellectual property.⁸ This empiricist approach collapsed into the contemporary pragmatism of economic approaches to intellectual property, which today dominate the international landscape.⁹ The romantic author critique, then, carries only limited explanatory power.

Second, although Shannon’s theories helps engineers design IP networks and iPods, they do not address the *semantic* content of information. The question is not

⁶ *Id.*

⁷ See Lawrence Lessig, *The New Chicago School*, 27 J. Legal. Stud. 661 (1998); Lesig, CODE AND OTHER LAWS OF CYBERSPACE (Basic Books 1999).

⁸ See Section II.A, *infra*.

⁹ *See id.*

whether information produced by humans can be translated into a form that is stable across different types of non-thinking machines such that it can then be retrieved again by humans sharing the same cultural and linguistic presuppositions. The question, rather, is whether information is stable across different human cultures, languages, places, times and social networks. A critical eye towards the history of science and technology suggests that human knowledge is far more fluid than anything modeled by Shannon. Moreover, it is this very instability that makes information excludable and that gives secret, private or restricted information its value. This is because information does not exist apart from the social structures out of which it emerges.

Finally, the constructivist epistemology that informs the New Chicago School and related approaches must be surfaced and questioned. It seems that much of the literature eschews such questions in favor of a pragmatic stance. We cannot truly know anything absolutely, pragmatism says, but we can understand enough to find out what seems to work. An economic model built on fictions such as perfect competition and the non-rivalry of information perhaps does some work as a rough descriptive heuristic. Much of the recent history of legal thought can be understood as a working out of this kind of pragmatism, as the law moved from an independent source of norms to an instrument in support of atomized, incommensurable interest groups asserting power.¹⁰

One major problem with mere pragmatism, however, is that it does not really work. The key debates in pragmatic intellectual property policy seem inevitably to

¹⁰ See, e.g., Brian Z. Tamanaha, *LAW AS A MEANS TO AN END: THREAT TO THE RULE OF LAW* (Cambridge Univ. Press 2006); Alasdair MacIntyre, *AFTER VIRTUE* (Univ. of Notre Dame Press, 2nd ed. 1984).

reduce into intractable empirical questions.¹¹ Moreover, even in the rare circumstance when the economic welfare consequences of a policy choice can be resolved to a reasonably granular level, the question of grounding remains. Why should welfare concerns trump distributional or other priorities? The pragmatism of contemporary welfare analysis provides no answer.¹²

There is substantial middle ground, however, between radical postmodern nihilism and an Enlightenment rationalism that has passed through the flames of postmodernity and boiled down to a groundless pragmatism. We can recognize that human knowledge has a “tacit dimension,” to use philosopher of science Michael Polanyi’s phrase, and yet acknowledge, as did Polanyi, that real knowledge is possible. We can admit that science proceeds through “paradigm shifts” and “research programs,” as Thomas Kuhn and Imre Lakatos observed, and yet suggest, along with Roy Bahskar, that science can model an external reality with progressive fidelity. In short, we can apply some version of a *critical* realist epistemology and ontology to the notion of “information.”

The implications of this observation for the legal regulation of information are far reaching. It suggests that postmodern critiques of “authorship” might have some merit, but are not in themselves a sufficient basis for policy. But it also suggests that the sterile, Shannon-esque view of information as a non-rival, disembodied commodity must admit

¹¹ See, e.g., Section V below for a discussion of the empirical problems relating to the network neutrality debate.

¹² See Tamanaha, *supra* Note 2; James R. Hackney Jr., UNDER COVER OF SCIENCE: AMERICAN LEGAL-ECONOMIC THEORY AND THE QUEST FOR OBJECTIVITY (Duke Univ. Press 2006), at 158-173.

severe limitations. A thick description of information must consider social rivalry. A thick account of information regulation must account for the social norms inherent in any social context. And a thick account of those social norms must admit the central role that rivalry – competition for status and resources – plays in the construction of such norms.

Section I of this paper sketches how Isaac Newton, Francis Bacon, and John Locke can in many ways be considered the progenitors of contemporary intellectual property theory. Section II recites how the Enlightenment project exemplified by Newton, Bacon and Locke failed (or at least foundered), only to be given new force in the context of communications theory and intellectual property by the information theory of Claude Shannon. Section III provides an alternative philosophical framework for the social aspects of information drawn from a critical realist epistemology and ontology. Section IV provides examples from other areas of information regulation – trade secrets, insider trading, and pre-contract disclosures – in which information seems to possess characteristics of social rivalry. Section V applies the notion of socially rivalrous information to the network neutrality debate, and suggests that a virtue ethics perspective is a better ground for information policy than the prevailing pragmatic approaches.

II. NEWTON, BACON, LOCKE: THE FATHERS OF CONTEMPORARY INTELLECTUAL PROPERTY POLICY

In this section I will discuss how the empiricist tradition, underwritten by Francis Bacon's view of science, Isaac Newton's mechanistic universe, and John Locke's epistemology and theory of language, informed early American notions of intellectual property. The enlightenment thinkers who laid the foundations for contemporary

intellectual property law worked within a Newtonian conception of “natural law,” a Baconian conception of “science,” and a Lockean foundationalist epistemology. That Newtonian-Baconian-Lockean foundation continues to underlie nearly all current discussions of the information “commons.” However, apart from some work about Locke’s labor theory,¹³ there has been little scholarship on the epistemological and ontological foundations supplied to contemporary intellectual property theory by Newton, Bacon and Locke. In the following subsections, I discuss how these three great minds influenced the genesis of American intellectual property theory, and how they continue to do so today.

A. NEWTON’S MECHANISTIC NATURAL LAW AND JEFFERSON’S CANDLE

Isaac Newton was a towering figure – *the* towering figure – of Seventeenth and Eighteenth Century science. In his magisterial *Principia Mathematica*, Newton demonstrated how his laws of motion and gravitation could fully describe the motions of any body in the universe. Newton’s laws were fixed and immovable, established by God at the creation. To know Newton’s laws was to know the mind of God.

Eighteenth century rationalists seized Newton’s ideas and took them in new directions. Newton’s deterministic laws suggested that traditional notions of divine agency required revision. Any level of divine causation beyond that of natural laws – what earlier thinkers such as Thomas Aquinas called “primary causation” – became

¹³ See Justin Hughes, *The Philosophy of Intellectual Property*, 77 Geo. L.J. 287 (1988); Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 Yale L.J. 1533 (1993); Alfred C. Yen, *Restoring the Natural Law: Copyright as Labor and Possession*, 51 Ohio St. L.J. 517 (1990).

superfluous. To know the natural laws that govern the universe, then, was to access reality directly, without the need for further inquiry about the will of God.¹⁴

These ideas about the regularity of natural laws and the human capacity to know such laws directly influenced Eighteenth Century political thought as well. As James Hackney has observed, the Newtonian view of the universe heavily influenced the early formalist “scientific” view of the common law.¹⁵ The study of law came to be viewed as a scientific exercising of deducing specific rules from the fixed first principles of a “natural” law.¹⁶

These Newtonian principles found their way into the fundamental documents of American jurisprudence. Historian of science Bernard Cohen has demonstrated that Jefferson’s conception of natural law in the Declaration of Independence reflects

¹⁴ As James Hackney summarizes Newton’s influence:

Newton postulated that time and space could be measured as absolute entities and were fixed.... Absolute time and space can be contrasted to the relational view put forward by Leibniz, who believed that space and time were not independent but tied to other things and events. The scientific debate between the absolutist view (Newtonian) and the relational (Leibniz) spilled over into philosophy because it was linked to general speculation regarding space, time, and human perception. Absolutism triumphed, supported the geometric vision, and allowed determinism to prevail.

James Hackney, Jr., *UNDER COVER OF SCIENCE: AMERICAN LEGAL-ECONOMIC THEORY AND THE QUEST FOR OBJECTIVITY*, at 12 (Duke Univ. Press 2007).

¹⁵ James Hackney, Jr., *UNDER COVER OF SCIENCE: AMERICAN LEGAL-ECONOMIC THEORY AND THE QUEST FOR OBJECTIVITY*, at 11-19 (Duke Univ. Press 2007).

¹⁶ For an excellent summary of how the new systematic view of science, combined with a Cartesian, mathematical view of knowledge, influenced legal theory, see M.H. Hoeflich, *Law & Geometry: Legal Science from Leibniz to Langdell*, 30 *Am J. Legal Hist.* 95 (1986). As Hackney notes, “[t]his [‘geometric legal science’] movement was profoundly influenced by ideas associated with Newtonian physics.” Hackney, *supra* Note 12, at 15. See also Brian Shapiro, *Law and Science in Seventeenth Century England*, 21 *Stanford L. Rev.* 727, 734-35 (1969) (stating that, in the Seventeenth Century, “Natural law, though hardly a novel conception in European thought, moved to the center of political analysis and was then gradually transformed from a religious to a more secular and scientific conceptual framework that sought to deal with the universal regularities of men in societies as others dealt with the regularities of physical nature.”).

Newtonian influences.¹⁷ Although Jefferson undoubtedly was influenced by Locke's broader conception of natural law, Cohen has shown that much of Jefferson's phraseology in the Declaration, particularly the reference to the "laws of nature" and "self-evident" truths, can also refer to Newton's concept of the fixed physical laws that govern everything in the universe and the "axioms" that constituted Newton's laws of motion.¹⁸ Thus, Jefferson was suggesting that the natural rights to which he referred in the Declaration, and the political principles he derived from those rights, were in some sense scientifically demonstrable.¹⁹

The Newtonian framework also was critical to the framing of the United States Constitution. The framers generally imbibed the eighteenth century belief that "the political and social world is governed by laws as certain and universal as those which govern the physical world" and that "there can be a science of government which is an image of the physical or biological sciences. . . ."²⁰ As with Jefferson and the Declaration, principles of "natural law" derived from Newtonianism supported the notion reflected in the Constitution that individuals have certain inalienable rights.²¹ Newtonian

¹⁷ Bernard Cohen, *SCIENCE AND THE FOUNDING FATHERS* (Norton 1995), at 114-134.

¹⁸ *Id.*

¹⁹ *Id.* at 132-134 (noting that "[i]n this sense the establishment of the new nation was in fact a grand experiment, just as much a test in the realm of politics as the prediction of the return of a comet had been a test in the realm of nature.").

²⁰ *Id.* at 255 (quoting Clinton Rossiter, *SEEDTIME OF THE REPUBLIC: THE ORIGIN OF THE AMERICAN TRADITION OF POLITICAL LIBERTY* (Harcourt, Brace & Co. 1953))

²¹ *Id.* at 256 (stating "Basic to the Newtonian system were the great generalizations of a universe governed by immutable natural laws and of harmony as the pattern and product of these laws. The first of these gave new sanction to the doctrine of natural law; the second had much to do with the growing popularity of the Whiggish principles of balanced government." (quoting Rossiter, *SEEDTIME OF THE REPUBLIC*, *supra* Note 17, at 133-34)). Cohen, however, questions Rossiter's view that Newtonianism contributed to "the Whiggish principles of balanced government." Cohen, *supra* Note 17, at 257.

science also provided a substrate of metaphors the framers drew upon when debating the proper structure of constitutional government.²²

Although the Newtonian influences on the Constitution seem evident, there is little direct evidence of what the founders specifically intended by Constitution's patent clause, the only specific reference to "science" in the Constitution.²³ The patent clause has been the subject of intense discussion surrounding and following the *Eldred v. Ashcroft* case.²⁴ Edward Walterscheid has illuminated the traditional theory that the intellectual property clause was a means of limiting monopolistic crown privileges.²⁵ More recently, Dotan Otlar has demonstrated that the "preamble" to the intellectual property clause – "to promote the progress of science and the useful arts" – was intended as a substantive limitation on Congress' power.²⁶ Otlar does not explore how this notion

²² *Id.* at 258-262. For example, James Madison referred to Newtonian principles of celestial physics in relation to the stability of the political system. *Id.* at 258. Likewise, the Federalist Papers are replete with references to Newtonian mechanics. *Id.* at 269-72.

²³ U.S. CONST., ART. I. sec. 8, para. 8; Cohen, *supra* Note 17, at 238-243.

²⁴ *Eldred v. Ashcroft*, 537 U.S. 186, 211-218 (2003). In *Eldred*, the Court rejected the argument that the preamble to the Copyright Clause prohibits an extension of the copyright term for works already protected by copyright. According to the Court, the Copyright Clause only requires Congress, "to the extent it enacts copyright laws at all, [to] create a 'system' that 'promote[s] the Progress of Science.'" *Id.* at 212 (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 5 (1966)). However, the Court stated, "it is generally for Congress, not the courts, to decide how best to pursue the Copyright Clause's objectives." *Id.* at 212. The Copyright Clause, the Court said, does not imply that copyright legislation is restricted to that which will provide authors with a specific incentive to produce new works. *Id.* at 214-15. A term extension for works already protected by copyright, the Court held, is broadly consistent with Congress' authority under the Copyright Clause, and that is enough. *Id.* at 214-16. For a summaries of the debate surrounding the *Eldred* Court's interpretation of the intellectual property clause, see Dotan Otlar, *Making Sense of the Intellectual Property Clause: Promotion of Progress as a Limitation on Congress's Intellectual Property Power*, 94 *Geo. L.J.* 1771 (2006); Paul M. Schwartz and William Michael Treanor, *Eldred and Lochner: Copyright Term Extension and Intellectual Property as Constitutional Property*, 112 *Yale L.J.* 2331 (2003).

²⁵ Edward Walterscheid, *To Promote the Progress of Science and the Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution*, 2 *J. Intell. Prop. L.* 1 (1994).

²⁶ Otlar, *supra* Note 24.

of “progress” is rooted in Newton, Bacon and Locke, but he does argue that the framers believed science progressively obtains useful knowledge.²⁷

All of these perspectives on the intellectual property clause are helpful, but they all miss the centrality of Newtonian science to the framer’s thought. A monopoly on information is anathema, indeed nearly inconceivable, because information is direct access to the reality that governs all of life.

This context helps explain the antipathy towards monopoly on information displayed, for example, in Jefferson’s letter to Isaac MacPherson. In that letter, cited by the Supreme Court in *Graham v. John Deere Co.* as a foundational metaphor for intellectual property policy, Jefferson compared knowledge to the flame on a candle.²⁸ One candle can be used to light many other candles, without diminishing the intensity of the original candle’s flame – in other words, the flame of knowledge is non-rival. Reality is not divisible and therefore cannot be diluted by possession – it is non-rival – and to exclude anyone from access to knowledge of reality is a form of tyranny.

The founders’ aversion to possession of information, then, was not grounded solely in the infant economy’s need to be free of restrictive crown privileges, although

²⁷ *Id.* at 1809-10.

²⁸ 383 U.S. 1, 8-9 (1966). As Edward Walterscheid has noted, it is improper to suggest that Jefferson was the driver of the intellectual property clause or that the original intent of that clause can be discerned from Jefferson’s relatively scattered writings about intellectual property. Edward Walterscheid, *The Use and Abuse of History: The Supreme Court’s Interpretation of Thomas Jefferson’s Influence on the Patent Law*, 39 IDEA 195 (1999). Indeed, Jefferson did not attend the Constitutional Convention and opposed any Congressional power to create intellectual property. Schwartz and Treanor, *supra* Note 24, at 2378. The point here, however, is not to suggest an originalist interpretation of the intellectual property clause, but rather to note the broad influence of Newton, Bacon and Locke on eighteenth century ideas about “science” and “knowledge,” which is exemplified in Jefferson, but also is present in other leading American thinkers of that time. Indeed, if anything, many of the American founders likely were even more constricted by the Newtonian worldview than Jefferson. See, e.g., Handler, *Nature Itself is All Arcanum: The Scientific Outlook of John Adams*, Proc. Of Amer. Phil. Soc. 120 No. 3 p. 216 (1976).

that surely is part of the story. It is also deeply grounded in the Newtonian belief that a discrete body of information, including the “laws” that support human liberty, is “out there,” available for possession by any rational person.

D. BACON AND THE “PROGRESS OF SCIENCE AND THE USEFUL ARTS”

Francis Bacon’s ideas were foundational to the so-called scientific revolution of the Enlightenment. His thought represents a shift from Aristotelian science’s stagnant focus on “forms” towards a more atomistic view of nature, which laid the foundation for the Enlightenment’s mechanistic, materialistic understanding of nature.²⁹ Moreover, Bacon’s notion of the progress of science, and of science’s practical application, directly informed the Enlightenment’s scientific optimism.³⁰

Bacon’s focus on discrete observations and induction stemmed from his rejection of the Cartesian notion that certainty is achieved by deducing specific truths from general principles obtained through internal reflection.³¹ Bacon recognized that social, political, and psychological limitations of the human condition opened to question any first principles derived from internal reflection.³² Descartes eschewed induction from sense data because the senses could potentially mislead – how can sense data prove with

²⁹ See Brian Vickers, *Francis Bacon and the Progress of Knowledge*, 53 *Journal of the History of Ideas* 495, 516-17 (1992) (stating that “Bacon shifts the discussion from the concept of ‘entity’ to the new idea that ‘it is solely the motion and arrangement of the minutest parts of bodies that can account for their macroscopic appearance.’ By conceiving Forms as ‘combinations of material units and simple motions’ which acted as ‘intrinsic agents’ in the constitution of matter, Bacon opened the door ‘for a purely mechanistic or materialistic type of explanation of natural philosophy.’”)

³⁰ See *id.* at 516 (stating “a whole cluster of now attainable ‘objects of knowledge’ – heat, electricity, magnetism, life phenomena – was actually created and sanctioned by the Baconian tradition as properly belonging to the cognitive scope of natural philosophy.”)

³¹ See Hackney, *supra* Note 14, at 7-10.

³² *Id.* at 7-9. Bacon called these “idols” of the tribe, cave, marketplace, and theatre. *Id.* at 7.

mathematical certainty that the entire observed world is not an illusion?³³ Bacon, in contrast, argued that a reasoned *method* could discipline the collection and systemization of sense data and thereby eliminate the foibles of the senses. He proposed a “middle way” between detached empiricism (which he likened to the way of an ant – collecting data but never acting on it) and equally detached rationalism (which he likened to the way of a spider, which spins webs out of its own silk): “[t]he middle way is that of the bee, which gathers its materials from the flowers of the garden and field, but then transforms and digests it by a power of its own.”³⁴

Bacon understood proper scientific practice to consist in disciplined empirical observation and testing, which would produce a steady increase in useful knowledge. His model for the natural sciences was the practice of mechanical arts:

Signs are also to be drawn from the increase and progress of systems and sciences. For what is founded on nature grows and increases, while what is founded on opinion varies but increases not. . . . In the mechanical arts, which are founded on nature and the light of experience, we see . . . these (as long as they are popular) are continually thriving and growing, as having in them a breath of life, at first rude, then convenient, afterwards adorned, and at all times advancing.”³⁵

Bacon eschewed any distinction between contemplative and active or practical knowledge: “these two directions,” he said, “the one active and the other contemplative, are one and the same thing; and that which in operation is most useful, that in knowledge

³³ *Id.*

³⁴ Francis Bacon, *Novum Organum*, Aphorism 95 (quoted in Hackney, *supra* Note 14, at 9.).

³⁵ Francis Bacon, *NOVUM ORGANUM*, at 299-300

is most true.”³⁶ Thus, Bacon legitimized applied technology as an object of scientific study.³⁷

In concert with and underlying Newton’s determinism, Bacon’s inductive methodology deeply influenced notions of jurisprudence.³⁸ Bacon was a practicing lawyer as well as a scientist.³⁹ He held a unified view of knowledge in which law, like natural science or mechanical technology, was part of the seamless garment of reality.⁴⁰ The incremental, inductive method he believed would yield the truths of nature would also reveal the truths of the natural law.⁴¹

The notion that reality is amenable to systemization through bite-sized induction, that knowledge is unified and ever advances in incremental steps, and that this advance of knowledge produces beneficial advances in technology, lies close to the heart of the thinkers who birthed contemporary intellectual property law. In a letter to Benjamin Waterhouse, for example, Thomas Jefferson muses on the cumulative nature of invention:

But the question, who commenced the revolution? is as difficult as that of the first inventors of a thousand good things. . . . the fact is, that one new idea leads to another, that to a third, and so on through a course of time until some one, with whom no one of these ideas was original, combines all together, and produces

³⁶ Francis Bacon, NOVUM ORGANUM IV.

³⁷ Vickers, *supra* Note 29, at 514 (stating “It follows that Bacon regarded pure science and technology not as two distinct pursuits but ‘as one single and indivisible enterprise’”).

³⁸ See Hackney, *supra* Note 14, at 14.

³⁹ *Id.*; Shapiro, *supra* Note 16, at 27-28; Hoeflich, *supra* Note 16, at 99.

⁴⁰ See Shapiro, *supra* Note, at 28 (stating that “[f]or Bacon then, the similarities between law and natural science were not coincidental. He insisted that the proper method of gaining knowledge was the same for all areas of inquiry and that law was simply one branch of knowledge.”).

⁴¹ *Id.* at 27-29.

what is justly called a new invention. I suppose it would be as difficult to trace our revolution to its first embryo.⁴²

In the same letter, Jefferson expresses his great optimism about the advance of science and technology:

When I contemplate the immense advances in science and discoveries in the arts which have been made within the period of my life, I look forward with confidence to equal advances by the present generation, and have no doubt they will consequently be as much wiser than we have been as we than our fathers were, and they than the burners of witches. Even the metaphysical contest, which you so pleasantly described to me in a former letter, will probably end in improvement, by clearing the mind of Platonic mysticism and unintelligible jargon.⁴³

These are notions with a direct lineage to Bacon.⁴⁴ These ideas echo resoundingly in the intellectual property clause's statement of purpose: "to promote the progress of science and the useful arts."

C. LOCKE'S EPISTEMOLOGY AND THE POSSESSION OF KNOWLEDGE

The final person of the intellectual property trinity is John Locke. There is a significant strain of contemporary intellectual property scholarship that develops Locke's ideas about property, particularly his labor theory of property, as a justification for

⁴² Thomas Jefferson letter to Benjamin Waterhouse, March 3, 1818, reprinted in Albert Ellery Berg, ed., *THE WRITINGS OF THOMAS JEFFERSON* (Thomas Jefferson Memorial Association of the United States 1905).

⁴³ *Id.*

⁴⁴ John Adams held an even more pragmatic, goal-oriented view of scientific progress. He famously stated that "nature itself is all Arcanum; and I believe it will remain so. It was not intended that men with their strong passions and weak principles should know much. Without a more decisive and magisterial moral discernment, much knowledge would make them too enterprising and impudent." See Handler, *Nature Itself is All Arcanum: The Scientific Outlook of John Adams*, Proc. Of Amer. Phil. Soc. 120 No. 3 p. 216, 224 (1976). In Adams' view, the sciences find their true vocation as servants of agriculture, manufactures, and commerce." *Id.* at 223.

intellectual property.⁴⁵ While Locke's labor theory has undoubtedly influenced the development of American intellectual property law, little has been said about how Locke's epistemology and theory of language fed into the notion of information as a public good.

Like Bacon, Locke attempted to develop an empiricist epistemology that would escape the solipsism of Cartesian rationalism and yet provide certain knowledge of the world as it is. Cartesian rationalism attempted to achieve certain knowledge starting with the data of human reason alone. Descartes believed that some ideas – such as the idea of one's own existence, summarized in his famous dictum "*cogito ergo sum*" – are innate and self-evident. Only innate ideas, Descartes held, are certain – all other ideas, including those derived from the senses, could result from mistake or deception. Therefore, Descartes sought to build the quest for certain knowledge on the foundation of innate ideas. The famous problem with Descartes' approach is that it led to solipsism, and thereby threatened to undermine the quest for certain knowledge.

Locke rejected Descartes concept of innate ideas. Instead, Locke argued that people are born with a mental *tabula rasa* and acquire ideas through experience. Experience comes through external data impinging on the senses ("sensations") and internal experience ("reflection"). A person can know his or her own existence, and the existence of God, intuitively. Knowledge of the external world, however, comes only from sense data.

⁴⁵ See, Note 13, *supra*.

Locke's views about empirical knowledge led to and were complemented by his view of language. For Locke, cognition is prior to language.⁴⁶ Human ideas (cognition) can accurately represent the world, and human language can accurately convey human ideas.⁴⁷ Language, then, can correspond to reality.⁴⁸ The acquisition of knowledge involves making accurate observations and conveying the ideas generated by those observations in plain language.⁴⁹ As Locke summarized it,

Knowledge then seems to me to be nothing but the perception of the connection and agreement, or disagreement and repugnancy, of any of our ideas. In this alone it consists. Where this perception is, there is knowledge; and where it is not, there, though we may fancy, guess, or believe, yet we always come short of knowledge.⁵⁰

Locke's epistemology and his theory of language, then, wonderfully complements Bacon's account of observational science and Newton's mechanistic universe. Bacon's method of careful, discrete observation and progressive data accumulation suggests a means whereby people can acquire reliable sense data. Newton's mechanistic universe suggests that the sense data people acquire by such a method relate to an unchanging,

⁴⁶ As Locke states in Book III ("On the Signification of Words") in *An Essay Concerning Human Understanding*, "[w]ords being voluntary signs, they cannot be voluntary signs imposed by him on things he knows not. That would be to make them signs of nothing, sounds without signification." *AN ESSAY CONCERNING HUMAN UNDERSTANDING*, Book III, Chap. II, Sec. 2 (Elbiron Classics 2006).

⁴⁷ Locke identified three purposes of language: "First, To make known one man's thoughts or ideas to another; Secondly, To do it with as much ease and quickness as possible; and, thirdly, thereby to convey the knowledge of things." *Id.*, Book III., Chap. X, Sect. 23.

⁴⁸ Locke did not, however, assert that language corresponds *directly* to reality. Rather, language signifies ideas, which in turn represent reality. *Id.*, Book III, Chap. I., Sect. 5 (stating that people "often suppose their words to stand also for the reality of things," but that "it is a perverting the use of words, and brings unavoidable obscurity and confusion into their signification, whenever we make them stand for any thing but those ideas we have in our own minds").

⁴⁹ Locke's theory of language was not naïve; he recognized that human language often is ambiguous. He proposed a number of ways in which speakers could make their meaning more plain. *See id.*, Book III, Chap. XI, Sect. 8-27.

⁵⁰ *Id.*, Book IV., Chap. I, Sect. 2.

predictable external reality. Locke's epistemology says that such sense data produces ideas ascertainable to human reason and that language can imperfectly but accurately convey ideas, which are prior to language. Human knowledge of the world as it is, then, rests on a firm empirical foundation.

This foundationalist account of knowledge informed the framers' views of intellectual property. The "embarrassment" of the intellectual property monopoly would be tolerated so that the edifice of empirical knowledge could continue to grow. And the foundationalist account of knowledge continues to inform our understanding of intellectual property today. The views of reality, science, and knowledge represented by Newton, Bacon, and Locke, however, came under withering fire in the nineteenth and twentieth centuries. The next section will briefly summarize some of those critiques. Following that summary, I will suggest some ways in which intellectual property theory has failed to address the collapse of the Enlightenment project, and will explore why that failure persists.

III. THE COLLAPSE OF FOUNDATIONALISM AND THE MARRIAGE OF JEFFERSON AND FOUCAULT VIA SHANNON

The Bacon-Locke-Newton trinity, of course, no longer reigns unchallenged. Many segments of the humanities have given up on any notion of objective truth in favor of a paradigm focused on local interests and power. Even in the natural sciences, the notion that human investigation of the natural world produces unmediated, direct access to reality has been deconstructed. We recognize today that the practice of Science involves conceptual, perceptive, and linguistic structures that permit us to understand

reality only through intermediate models. Reality may indeed be external to human mind and language, and we may be able to construct better models of reality over time, but our scientific models are not to be confused with reality itself. Our scientific models are analogous to, but not coequal with, the reality we are trying to model.

D. THE COLLAPSE OF THE ENLIGHTENMENT PROJECT

Many sources chronicle the collapse, or at least crisis, of the Enlightenment's foundationalist project. For example, Alasdair MacIntyre demonstrates how the rationalist-empiricist understanding of the role and limitations of human reason led to a crisis in ethical thought.⁵¹ The empiricist and rationalist projects ultimately detached reason from any notion of teleology.⁵² In the classical tradition, ethics were derived from an a priori notion concerning how humanity "ought to be."⁵³ With the rise of empiricism and rationalism, the notion of an "ought" became divorced from what "is."⁵⁴ Science and the scientific method – the only path to certain knowledge – therefore could not inform ethical reflection. Ethics then became a matter of mere emotions, or worse, an expression of Nietzsche's naked will to power.⁵⁵

The deterministic, Newtonian foundations of science, however, were undermined by its own methods. Charles Darwin's *Origin of Species* suggested that nature developed through random processes rather than deterministically.⁵⁶ Darwin's probabilistic account of nature, with its emphasis on competition, efficiency, and survival, was imported into

⁵¹ Alasdair MacIntyre, *AFTER VIRTUE* (Univ. of Notre Dame Press, 2nd ed. 1984), at 49-61.

⁵² *Id.*

⁵³ *Id.* at 52.

⁵⁴ *Id.* at 49-61.

⁵⁵ *Id.* at 52-78.

⁵⁶ See Hackney, *supra* Note 14, at 41-42.

ethics and social theory and underwrote the pragmatist project.⁵⁷ While Cartesian certainty was unobtainable and even Lockean empiricism was unrealistic, a variety of viewpoints and observations could exist in a competition of ideas, which could result in continual refinement even if perfection were unobtainable.⁵⁸ In fact, “perfection” was no longer a viable concept, rooted as it was in a prior notions of the good, whether of Plato’s forms, Aquinas’ God, Descarte’s pure intuition, or Bacon and Locke’s accurate and objective observations of nature.

Einstein’s description of general relativity further eroded the mechanistic Newtonian universe. Einstein showed that it is impossible to make a complete measurement of an object in the universe because time, as well as position, must be a component of the measurement.⁵⁹ Time, however, is not fixed and deterministic; it is relative to the position of the observer.⁶⁰ No empirical measurement, then, constitutes a fixed, absolute description of reality.⁶¹ For many, particularly following the devastation of the First World War, this suggested that there is no objective basis for law and ethics, contrary to the Newtonian view that all of reality is describable through fixed laws.⁶²

However, general relativity also supported the logical positivist view that ethics could not be derived from universal first principles.⁶³ Once the Newtonian universe was

⁵⁷ *Id.* at 41-49.

⁵⁸ *Id.*

⁵⁹ *Id.* at 83.

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.* at 84.

⁶³ *Id.* at 85-88.

overthrown, the concept of ethics derived from natural law seemed to go with it.⁶⁴ The only foundation for law and policy, then, is exact, scientific, empirical observations stripped of value judgments.⁶⁵ James Hackney recently demonstrated how this renewed emphasis on scientism motivated the development of neoclassical economics, which informed legal scholarship to provide a seemingly scientific basis for the law.⁶⁶ The Newtonian foundations of Enlightenment jurisprudence thus had worn away, but the foundation had apparently been filled in with a pragmatic, value-free substrate.

This renewed claim to objectivity did not last. The development of quantum mechanics suggested that the most extreme implications of general relativity – implications resisted even by Einstein – were true: the locations of fundamental particles of matter could not be predicted with certainty.⁶⁷ The very act of observation affects the measurement, and the best that can be achieved is a probability function for the position of a fundamental particle.⁶⁸ This “uncertainty principle” extended into considerations of ontology: how can we conceive of a real, distinct, objective, external universe if the act of observation affects how the universe appears to us?⁶⁹

At the same time, historians and philosophers of science began to expose the sociological pretensions of positivism. Thomas Kuhn argued that science never really proceeded along Bacon’s incremental model.⁷⁰ Instead, scientists tended to be as myopic

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.* at 89-120.

⁶⁷ *Id.* at 122-23.

⁶⁸ *Id.* at 123.

⁶⁹ *Id.* at 124.

⁷⁰ Thomas Kuhn, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* (Univ. of Chicago Press, 2nd ed. 1970).

and self-interested as anyone else, so that science would quiesce and eventually stagnate until some crisis – such as the Copernican revolution, or relativity theory – forced a “paradigm shift.”⁷¹ Although Kuhn’s historical narrative has been questioned at many points, it has become clear that science is a thoroughly human enterprise. The very institutions and practices that are supposed to guarantee scientific objectivity – publication and peer review – are subject to prejudices and gamesmanship.⁷²

And, to fuel the fire, the ability of language to convey any objective meaning at all has been challenged; the notion of a reality external to technologically mediated signs has been questioned; and the ability to separate knowledge from power – to discern any kind of truth apart from power – has been cast into doubt.⁷³ As Jean-Francois Lyotard puts it, “knowledge and power are simply two sides of the same question: who decides what knowledge is, and who knows what needs to be decided?”⁷⁴

It seems clear that contemporary intellectual property theory can no longer be grounded in Enlightenment views about knowledge and science. How, then, has intellectual property theory proceeded in the post-Enlightenment context? The next section will examine two broad streams of post-Enlightenment critical intellectual property theory. The first is a post-modern, post-structuralist critique of the “romantic

⁷¹ *See id.*

⁷² For an interesting discussion of how these dynamics affect the contemporary field of theoretical physics, see Lee Smolin, *THE TROUBLE WITH PHYSICS: THE RISE OF STRING THEORY, THE FALL OF A SCIENCE, AND WHAT COMES NEXT* (Houghton Mifflin 2006).

⁷³ *See generally*, “Postmodernism,” in *The Stanford Encyclopedia of Philosophy*, Section 5, “Deconstruction,” and Section 6, “Hyperreality,” available at <http://plato.stanford.edu/entries/postmodernism/> (last visited August 2, 2007). *See also* Jean-Francois Lyotard, *THE POSTMODERN CONDITION: A REPORT ON KNOWLEDGE*, Trans. Geoff Bennington and Brian Massumi (Univ. of Minnesota Press 1984).

⁷⁴ Lyotard, *supra* Note 76, at 8-9.

author.” The second is an economic critique that reflects a sort of resurgent foundationalism built on an ontology of information derived from Claude Shannon’s information theory.

E. DECONSTRUCTING THE ROMANTIC AUTHOR CRITIQUE

Given the significant developments in epistemology and in the history and philosophy of science since Bacon, Newton and Locke, one would expect to find a robust post-critical literature deconstructing the information nonrivalry fiction. The only serious postmodern critique of intellectual property within legal scholarship, however, focuses instead on textual criticism and the “romantic author.”

Michel Foucault’s essay “*What is an Author*” set the stage for the romantic author critique.⁷⁵ Foucault viewed the concept of “authorship” as historically contingent on Enlightenment individualism and as reflecting a drive to privatize and control knowledge.⁷⁶ Martha Woodmansee and others thickened Foucault’s historical perspective with an account of how the concept of authorship in eighteenth-century Germany was tied to the rise of the book trade.⁷⁷

The “romantic author” critique was taken up as an interdisciplinary movement within intellectual property scholarship through the Society for Critical Exchange, which

⁷⁵ Michel Foucault, “What Is an Author,” in *TEXTUAL STRATEGIES; PERSPECTIVES IN POST-STRUCTURALIST CRITICISM*, ed. Josue V. Harari (Cornell Univ. Press 1979), 141-160.

⁷⁶ See Carla Hesse, *Enlightenment Epistemology and the Laws of Authorship in Revolutionary France, 1777-1793*, 30 *Representations* 109 (1990).

⁷⁷ Cite – n. 4 in Hesse article; *See also* Hess, *supra* Note 169, at 110.

produced the *Bellagio Declaration*.⁷⁸ The heart of the Bellagio Declaration is a notion of intellectual property as a power play founded on the fiction of the solitary inventor or author.⁷⁹ As the Bellagio Declaration signatories affirmed,

Contemporary intellectual property law is constructed around a notion of the author as an individual, solitary and original creator, and it is for this figure that its protections are reserved. Those who do not fit this model -- custodians of tribal culture and medical knowledge, collectives practicing traditional artistic and musical forms, or peasant cultivators of valuable seed varieties, for example -- are denied intellectual property protection.⁸⁰

James Boyle developed a theory of law and information based on this poststructuralist critique of authorship.⁸¹ Boyle noted the trend away from considering “information” in free speech terms and towards viewing “information” in merely economic terms.⁸² This trend, Boyle argued, “provides no surcease from the paradoxes of information.”⁸³

One of those paradoxes, according to Boyle, is information’s dual economic role as a foundation for exchange and a commodity of exchange.⁸⁴ Classical economics assumes perfect information, or makes adjustments for imperfect information, but always

⁷⁸ See Society for Critical Exchange website, <http://www.case.edu/affil/sce/index.html> (visited July 23, 2007) and THE BELLAGIO DECLARATION, available at <http://www.case.edu/affil/sce/BellagioDec.html> (visited July 23, 2007).

⁷⁹ See THE BELLAGIO DECLARATION, available at <http://www.case.edu/affil/sce/BellagioDec.html> (visited July 23, 2007).

⁸⁰ *Id.*

⁸¹ James Boyle, *A Theory of Law and Information: Copyright, Spleens, Blackmail, and Insider Trading*, 80 Cal. L. Rev. 1413, 1441-42 (1992).

⁸² *Id.* (stating “[i]ncreasingly, scholarly discussions of information are turning away from liberal constitutionalism and rights theory towards the language of microeconomics.”).

⁸³ *Id.*

⁸⁴ *Id.* at 1444-45.

requires a relatively free exchange of information.⁸⁵ But information is also a commodity in itself, something that is produced because it has independent economic value.⁸⁶ The market for such information paradoxically requires that the information be kept secret.⁸⁷

This paradox might be solved by viewing different kinds of information as presenting different kinds of problems. In one instance, the information problem might be more like a monopolization issue, in which access should be encouraged; in another, the information problem might be more like a public goods problem, in which propertization and Coasian bargaining will provide a solution.⁸⁸ However, Boyle suggests, the empirical questions relating to which paradigm should obtain are impossible to answer at any level of detail.⁸⁹

If the traditional economic justification is so tenuous, why then do we propertize intellectual work under rubrics such as copyright? Prior to the Eighteenth Century enlightenment, Boyle suggests, authors were viewed as ordinary craftsman, one relatively small piece of a collective effort to produce a text.⁹⁰ However, Boyle argues (drawing on Woodmansee, and, in turn, on Foucault), Eighteenth Century enlightenment thinkers came to view authorship as an act of inspiration, a flash of genius.⁹¹ The author, in this

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *Id.* at 1451-52.

⁸⁹ *Id.* As discussed in Section V, *infra*, Frischman's "if infrastructure, then commons" heuristic is one effort to solve this sort of paradox. The example of network neutrality, however, shows that empirical questions remain even under this framework.

⁹⁰ Boyle, *supra* Note 81, at 1451-52.

⁹¹ *Id.* at 1464-65.

view, added something new, transformative, and original to that which already existed.⁹²

The author then has a moral right to protect and control this aspect of his or her persona.⁹³

Boyle argues that this historically contingent concept of authorship continues to underwrite the economic perspective on law and information. For Boyle, the romantic author serves as the hinge between the poles of the economic information paradox.

“[B]ecause in most conflicts the paradigm of authorship tends to fit one side better than the other,” he says, “this romantic grounding provides economic analysis with at least the illusion of certainty. The author wins.”⁹⁴ Having deconstructed the power relationship that lies at the heart of contemporary intellectual property policy, Boyle suggests that we need a politics of information instead of the seemingly disinterested language of economics.⁹⁵

Boyle’s focus on the politics of intellectual property is helpful.⁹⁶ It seems clear that the romantic author underwrites the “moral rights” stream of intellectual property policy, though the philosophical underpinnings likely are more Hegelian than Boyle seems to suggest.⁹⁷ It is not clear, however, that the romantic author critique accurately

⁹² *Id.* at 1465 (stating “[i]n this vision, the author was not the journeyman who learned a craft and then hoped to be well paid for it. The romantic author was defined not by mastery of a prior set of rules, but instead by the transformation of genre, the revision of form. Originality became the watchword of artistry.”).

⁹³ *Id.* at 1468-69.

⁹⁴ *Id.* at 1527.

⁹⁵ *Id.* at 1538-40. Boyle further develops this theme in James Boyle, A POLITICS OF INTELLECTUAL PROPERTY: ENVIRONMENTALISM FOR THE NET?, 47 *Duke L.J.* 87 (1997).

⁹⁶ See, e.g., David W. Opderbeck, *The Penguin’s Paradox: The Political Economy of International Intellectual Property and the Paradox of Open Intellectual Property Models*, 18 *Stanford L. & Policy Rev.* 101 (2007).

⁹⁷ Cf. Hughes, *supra* Note 13.

captures the strands of Eighteenth Century enlightenment thought that most directly informed American intellectual property policy.

As Carla Hesse has demonstrated, some streams of thought within the French Enlightenment contradict the romantic author thesis.⁹⁸ Some French Enlightenment thinkers whose epistemology tended towards Descartes' notion of innate ideas, such as Denis Diderot, argued that authors have a moral claim to their work because ideas spring *sui generis* from the author's mind.⁹⁹ This is consistent with the romantic author thesis. However, other French thinkers, such as the marquis de Condorcet, whose epistemology was more akin to Locke's sensationalist conception of ideas, rejected this position.¹⁰⁰

Condorcet argued that because ideas arise through sense perceptions, and sense perceptions give more or less direct access to Nature, no one person can claim a natural moral privilege to "possess" an idea.¹⁰¹ Moreover, because ideas are based on sense perceptions and are not created by individual minds, an infinite number of people can share the idea without diminution.¹⁰² In fact, Condorcet argued, authorial privileges tend to unnaturally limit access to ideas and to promote literary embellishment rather than the sort of plain language that communicates ideas directly.¹⁰³

⁹⁸ Hesse, *supra* Note 76, at 115. The historical context for Hesse's discussion is a debate in pre-Revolutionary France about whether to abolish the Paris Publishers' and Printers' Guild. *See id.* at 114-115. The Guild was in fact suppressed during the Revolution. *Id.* at 117-119. The first literary property law that was adopted after the revolution granted authors a limited privilege in their works. *Id.* at 119-20. The primary political motivation for this move, however, was not to enhance authorial power, but rather to commoditize books and to control the flow of seditious literature. *Id.* at 119-124.

⁹⁹ *Id.* at 114.

¹⁰⁰ *Id.* at 115.

¹⁰¹ *Id.* at 115-16.

¹⁰² *Id.* at 116.

¹⁰³ *Id.*

The differences between Condorcet and Diderot concerning authorial privileges reflect the broader Eighteenth Century debates between Cartesian rationalists and Lockean empiricists.¹⁰⁴ It is impossible to discuss in detail here how that debate wound into the thinking of the American founders. It does seem clear, however, that the empiricist tradition reflected in the Scottish Enlightenment significantly influenced the founders.¹⁰⁵ Indeed, Jefferson’s observation that “one new idea leads to another, that to a third, and so on through a course of time until some one, with whom no one of these ideas was original, combines all together, and produces what is justly called a new invention” belies the notion that Jefferson’s candle is rooted in romantic author or romantic inventor tropes.¹⁰⁶ Moreover, this empiricist, pragmatic American vision of intellectual property that was inaugurated in the intellectual property clause of the U.S. Constitution now prevails around the world. If this is so, the romantic author critique might not be as significant as it would otherwise seem.

F. PRAGMATIC APPROACHES IN THE CRITICAL VEIN AND SHANNON INFORMATION

1. *Constructing Legal Theory from Shannon Information*

The romantic author critique does not appear to have had much direct impact on public policy. Instead, the romantic author critique has been fused with other notions about “information” to create a focus on the “law” of “code.” Open source and free

¹⁰⁴ *Id.* at 117.

¹⁰⁵ See, e.g., Roy Branson, *James Madison and the Scottish Enlightenment*, 40 *Journal of the History of Ideas* 235 (1979); Daniel Walker Howe, *Why the Scottish Enlightenment Was Useful to the Framers of the American Constitution*, 31 *Comparative Studies in Society and History* 572, 572-73 (1989) (summarizing studies of links between the American founders and Scottish Enlightenment thought).

¹⁰⁶ Thomas Jefferson Letter to Benjamin Waterhouse, *supra* Note 42.

culture advocates such as Yochai Benkler and Lawrence Lessig, for example, argue that open access to information can promote efficiency as well as enhancing democracy.¹⁰⁷

Lessig and many other writers focused on the promise and perils of networked technology reflect an odd mix of influences. They unabashedly adopt an Enlightenment Jeffersonian stance about disembodied information.¹⁰⁸ And yet, Lessig acknowledges that he has been “especially influenced” by James Boyle’s postmodern critique of intellectual property policy.¹⁰⁹ How are Lessig and other critical scholars able to fuse Enlightenment empiricism with postmodern anti-realist social and linguistic constructionism? The answer is contemporary information theory, particularly as applied to social theory about communications networks and the internet.

The telecommunications revolution of the twentieth century produced theories of information that have profoundly influenced intellectual property policy. In 1948, Claude Shannon published *A Mathematical Theory of Communication*, which marks the beginning of modern information theory.¹¹⁰ Shannon’s primary concern was to describe how communications could be compressed and transmitted over a communication system with minimal interference or data loss. Shannon demonstrated mathematically how the content of a communication could be taken from one medium, encoded and compressed,

¹⁰⁷ See, e.g., Lawrence Lessig, *CODE AND OTHER LAWS OF CYBERSPACE* (Basic Books 1999); Yochai Benkler, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* (Yale Univ. Press 2006).

¹⁰⁸ Lessig, quoting at length from Jefferson’s Letter to Isaac MacPherson, says “Jefferson put it better than I...” Lawrence Lessig, *CODE AND OTHER LAWS OF CYBERSPACE* (Basic Books 1999), at 132. After referring to Jefferson’s candle, Lessig states “[u]nlike apples, unlike houses, ideas are something I can take from you without diminishing what you have.” *Id.*

¹⁰⁹ *Id.* at 6, note 7.

¹¹⁰ Claude Shannon, *A Mathematical Theory of Communication*, *Bell System Technical Journal*, vol. 27, pp. 379-423, 623-656, July, October, 1948.

stored, transmitted over another medium, decoded and decompressed, and delivered to another medium, with minimal data loss. These concepts underlie all contemporary digital communications networks, including the algorithms that allow communication across the diverse nodes of the Internet.

Shannon's mathematical information theories are important for contemporary intellectual property scholarship in two ways. First, Shannon demonstrated the semantic content of a communication can be extracted from its original medium, converted into a digital signal or code, sent across a communication channel with minimal data loss, and extracted by various types of receivers. Second, Shannon that communications channel need not be limited to a single message.¹¹¹ Because signals can be compressed during transmission and amplified by the receiver, multiple users can share the same channel "space."¹¹²

The notion that "code" can be abstracted from the communications medium resonates with the Jeffersonian Enlightenment idea of the "laws of Nature." It suggests that "information" is indeed an abstract property that cannot be used up – that information is non-rival. But the abstract concept of "code" also resonates with postmodern ideas about language and knowledge construction. Code is like the "signifier" of a "sign." Code has no meaning in itself. It is nothing but an arbitrary string of zeros and ones, until it is interpreted from within a particular context to refer to

¹¹¹ See Yochai Benkler, *Some Law and Economics of Wireless Communication*, 16 Harv. J. L. & Tech. 25, 40-45 (2002). As Benkler notes, Shannon's theory about "[p]rocessing gain poses a fundamental challenge to the prevailing paradigm, in that with processing gain there is no necessity that anyone be the sole speaker in a given 'channel.'" *Id.* at 43.

¹¹² *Id.*

something signified.¹¹³ This connection between code, semiotics, and world-building, in turn, resonates with the notion of “cyberspace” that fueled the imaginations of technologists – and legal theorists – as they began wrestling with the enormous challenges of the Internet. “Cyberspace” came to be seen as a sort of “place” that is constructed by code.¹¹⁴ Jefferson could shake hands with Foucault and Saussure in cyberspace.

The philosophical aspects of the role of code in constructing cyberspace theory naturally provided the backdrop for legal theorists as the growth of the Internet began to attract their attention in the 1990’s. Lawrence Lessig’s famous dictum that “code is law” is deeply Shannon-esq.¹¹⁵ “Code” is law because “code,” as abstracted, compressed “information,” governs conduct in the non-natural, constructed “world” of cyberspace.¹¹⁶

¹¹³ For a general discussion of semiotics, see “Hermeneutics,” in The Stanford Encyclopedia of Philosophy, available at <http://plato.stanford.edu/entries/hermeneutics/#Semiotics> (last visited August 8, 2007); Daniel Chandler, *Semiotics for Beginners*, available at <http://www.aber.ac.uk/media/Documents/S4B/sem02.html> (last visited August 1, 2007).

¹¹⁴ See William J. Mitchell, *CITY OF BITS* (MIT Press 1998), at 21 (stating “[p]laces in the cyberspace of the Net are software constructions.”); Julie Cohen, *Cyberspace as/and Space*, 107 Colum. L. Rev. 210 (2007). As Cohen notes, “[a]mong U.S. legal scholars, Code in particular has become the foundational text for current theories of cyberspace as space.” *Id.* at 222.

¹¹⁵ Lessig does not refer directly to Shannon when he asserts that “code is law.” See Lawrence Lessig, *Code and Other Laws of Cyberspace* (Basic Books 1999), at 1-8. Lessig states that draws his notion of code as law from William Mitchell. See William J. Mitchell, *CITY OF BITS* (MIT Press 1995), at 111 (stating “[o]ut there on the electronic frontier, code is the law.”). Mitchell pictured “code” as a sort of entity that could be controlled by individuals. See *id.* at 112. He assigned a principal role to “code” in the “construction” of a new domain of existence that had come to be called “cyberspace.” *Id.* at 109.

¹¹⁶ Mitchell, *City of Bits*, supra note 101, at 109. As Mitchell put it, Somewhere along the line, our conception of what a computer *is* began to change fundamentally. It turns out that these electronic boxes . . . are primarily communication devices – not dumb ones like telephone handsets, that merely encode and decode electronic information, but smart ones that can organize, interpret, filter, and present vast amounts of information. Their real role is to construct cyberspace – a new kind of place for human interactions and transactions.

Id.

Lessig's notion of "architecture" in his account of the "New Chicago School" of regulation previews this constructivist account of "code."¹¹⁷ The "New Chicago School," Lessig explained, concerns four types of constraint that regulate behavior: law, social norms, markets, and architecture.¹¹⁸ "Architecture," Lessig said, "is a constraint that will sound much like 'nature.'"¹¹⁹ By "nature" Lessig did not mean exactly the Jeffersonian concept of natural law, but rather, "'the world as I find it.'"¹²⁰ Lessig cited Michel Foucault as an example of someone who is concerned with the regulatory aspects of "architecture."¹²¹ In fact, Lessig accorded Foucault a significant role in suggesting that "architecture" is malleable and subject to the totalitarian drive to "make culture serve power."¹²²

The second important aspect of Shannon's theories – that multiple users can share a communications channel -- supported the notion of an open digital "commons." Yochai Benkler, for example, drew on Shannon to demonstrate that spectrum is not really a discrete, closed resource that must be rationed.¹²³ Rather, Benkler argued, the correct thing to measure is network communications capacity.¹²⁴ Shannon's theory of processing gain demonstrates that many messages can travel over the same channel without interference.¹²⁵ The most significant limitation relating to channel capacity is the receiver

¹¹⁷ Lawrence Lessig, *The New Chicago School*, 27 J. Legal. Stud. 661 (1998).

¹¹⁸ *Id.* at 662-63.

¹¹⁹ *Id.* at 663.

¹²⁰ *Id.* at 663.

¹²¹ *Id.* at 665.

¹²² *Id.* at 665, note 19, and 691.

¹²³ Yochai Benkler, *Some Economics of Wireless Communications*, 16 Harv. J. L. & T. 25 (2002).

¹²⁴ *Id.*

¹²⁵ *Id.* at 42-43.

technology, not the capacity of the channel.¹²⁶ Further developments of information theory relating to cooperative networks showed that a multiplicity of users employing nodes and repeaters could actually increase the efficiency with which information can be communicated.¹²⁷ “Bandwidth,” then, “is not an independent and finite resource whose amount needed for a communication is fixed prior to the act of communicating.”¹²⁸

There is no pressing need to ration bandwidth.

Benkler extended these ideas in his general theory of peer production.¹²⁹ The notion of an “information commons” is efficient from a welfare perspective because information theory shows that large amounts of disparate information can be sent in disembodied form across a given communication channel without significant loss or interference.¹³⁰ And this openness in the communication channel promotes autonomy, democracy, and innovation.¹³¹ Open source networks can foster democratic participation because every individual in the network can use and contribute to the “code,” without any one person or group exercising ownership. Recently, scholars have begun to apply similar insights drawn from Shannon’s information theory to thorny questions of biodiversity and gene patents.¹³²

¹²⁶ *Id.*

¹²⁷ *Id.* at 44-46.

¹²⁸ *Id.* at 46.

¹²⁹ See Benkler, *THE WEALTH OF NETWORKS*, *supra* Note 107.

¹³⁰ See Kevin Werbach, *Supercommons: Toward a Unified Theory of Wireless Communication*, 82 *Tex. L. Rev.* 863, 875-76 (2004).

¹³¹ *Id.* at 876-77.

¹³² See Jim Chen, *Webs of Life: Biodiversity Conservation as a Species of Information Policy*, 89 *Iowa L. Rev.* 495 (2004). Chen argues that “[i]nsights drawn from the regulation of Internet and information technology can help us formulate jurisprudentially robust, pragmatically attainable programs for environmental protection.” *Id.* at 501. See also Dan L. Burk, *The Problem of Process in Biotechnology*, 43 *Hous. L. Rev.* 561, 586-88 (2006) (critiquing the application of information theory to biotechnology).

The Shannon-esq notion of information as “code” and of the code-carrying channel capacity as highly elastic is reflected in Brett Frishman’s recent work on information “infrastructure.”¹³³ Building on some of the insights of Benkler and Lawrence Lessig, Frischman has argued that information can sometimes be equated with physical public goods “infrastructure.”¹³⁴ This analytical move enables Frischman to argue that, from a supply-side perspective, welfare is often enhanced when information “infrastructure” is made openly available rather than propertized. Lessig suggested that “code is law” and that the “code layer” should remain open; Benkler suggested that opening the “code layer” can result in efficiencies of scale under some circumstances; and Frishman shows that the “code layer” can sometimes be equated to physical public goods infrastructure.

Frischman thus brilliantly marries Benkler and Lessig’s insights with the more traditional law and economics scholarship of leading intellectual property theorists such as Mark Lemley. Frischmann departs from typical law and economics analysis of intellectual property, and reflects more of a “New Chicago School” emphasis, however, in his conclusion that “a myopic focus on free riding places too much emphasis on market-driven supply and on excludability as the solution.”¹³⁵ Because basic research, in Frischmann’s view, is fundamentally an input into a variety of productive uses, the positive externalities associated with opening access to this “infrastructure” must be

patents). As Burk notes, “since information is encoded as molecular structure, the information is only useful when embodied in such structures. . . .” *Id.* at 587.

¹³³ See generally, Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 Minn. L. Rev. 917, 990-1003 (2005).

¹³⁴ *Id.*

¹³⁵ *Id.* at 994.

weighed against the free rider problem. He concludes that “the balance tips heavily toward access” because transaction costs relating to patent and other property rights in upstream research stifle downstream innovation.¹³⁶ Indeed, he says that “relying on property-based, market-driven management of basic research results [is] almost outrageous, much like the seemingly ridiculous hypothetical of granting ownership of Lake Michigan to an individual property owner.”¹³⁷ Thus, he reaches a result that many critical scholars would find satisfactory: that basic research should be supplied by governments as part of a commons, rather than by markets under a property-based regime with contractual bargaining.¹³⁸

2. *Deconstructing Legal Theory Built on Shannon*

The insights of post-Enlightenment Shannon-esq thinkers such as Lessig, Benkler and Frischman have been and continue to be vital to the ongoing conversation about intellectual property and information policy. It might be well to ask, however, whether an ontology built on Shannon information theory, semiotics and social constructivism is a sound foundation for policy. A survey of the discipline of the philosophy of information suggests that the epistemological and ontological implications of Shannon theory are not nearly so well settled as cyberlaw and legal information theory would suggest.

Moreover, a review of postmodern social theory likewise suggests that the notion of a disembodied “cyberspace” governed by abstract “code” is inadequate.

¹³⁶ *Id.* at 996-98.

¹³⁷ *Id.* at 997-98.

¹³⁸ *Id.* at 995-98.

The ontology of information remains very much an open question in the rapidly growing field of the philosophy of information Shannon.¹³⁹ For example, drawing on Shannon, communications theorist Norbert Wiener argued that information must be a property of the universe independent of matter and energy.¹⁴⁰ In contrast, technologist and philosopher Rolf Landauer represents this school: he asserts that “information is physical.” Landauer is a quantum computing theorist with IBM. Landauer argued that there is no information without an associated physical state constituted by matter and energy.¹⁴¹

The question whether information is an independent property of the universe, or is a property of energy and matter, or is something in between, impacts an issue directly relevant to the question of rivalry and to the construction of cyberspace: is “information” independent of beings that can perceive and extract it from nature?¹⁴² Wiener’s approach suggests that information is indeed a thing-in-itself, which does not depend on the presence of an intelligent informee.¹⁴³ Landauer’s approach suggests that it is nonsensical to speak of “information” as a thing independent of intelligent perception; perception is the physical state that constitutes what we call “information.”¹⁴⁴

¹³⁹ Luciano Floridi, Open Problems in the Philosophy of Information, 35 *Metaphilosophy* No. 4, 572-73 (July 2004), at 560-61.

¹⁴⁰ Norbert Wiener, *CYBERNETICS OR CONTROL AND COMMUNICATION IN THE ANIMAL AND THE MACHINE* (MIT Press 2nd ed. 1961), at 132 (stating “information is information, not matter or energy. No materialism which does not admit this can survive at the present day.”).

¹⁴¹ Rolf Landauer, *Information is Physical*, *Physics Today*, May 1991; Landauer, *The Physical Nature of Information*, *Physics Letters A* 217 (1996) 188-193.

¹⁴² See Floridi, *supra* Note 139, at 573-74.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

But we must also consider the “third way” approaches to the ontology of information. Middle ground approaches might suggest that “information” is a sort of “relational interface” between the universe and intelligent observers, or that “information” exists in a separate realm that is accessible to, but independent of, the observer’s universe.¹⁴⁵ Although it is beyond the scope of this paper to attempt a resolution of the mind-matter debate, the concept of “emergence” might present an opportunity to set that debate aside, and to understand “information” as neither wholly independent of matter and energy nor as entirely a property of matter and energy.

Emergence theory suggests that intelligent, free minds can emerge from underlying physical states, such that the mind is dependent on physical states but not entirely reducible to them.¹⁴⁶ This seems to free us from the polar choice between Wiener and Landauer. Information *is* physical, as Landauer suggests, but it is not *merely* physical. The physical states that give rise to what we call “information” can produce something that transcends those physical states. And yet, “information” in nature cannot be analyzed apart from physical context.

As the “middle ground” approaches suggest, neither of the poles represented by Wiener or Landauer adequately address the social dimensions of how human beings *access* and *use* information – what philosophers of information call the “semantic

¹⁴⁵ *Id.* at 574. Floridi suggests that the first “middle ground” approach is reflected in constructionist views of reality, while the second is reflected in Platonism. *Id.*

¹⁴⁶ This position about the nature of the mind is called “non-reductive physicalism.” See Nancey Murphy, *BODIES AND SOULS, OR SPIRITED BODIES* (Cambridge Univ. Press 2006), at 121-22.

content” of information.¹⁴⁷ Yet, it is precisely social dimensions that concern the law. The law concerning information is about the human *meaning* ascribed to signals; it is not about signals *qua* signals. Conceiving of information either as an ontologically separate entity called “code” or as a sort of physical hard-wiring misses entirely the purposes of the law. By themselves, these sterile views of information leave us with a dry utilitarian power grab.

The social theory underlying notions of “cyberspace” in contemporary legal scholarship is likewise wobbly.¹⁴⁸ Julie Cohen argues that all of the debates about cyberspace and the digital commons in the legal scholarship literature improperly conceive of cyberspace as entirely disembodied and separate from “real” space. Instead, Cohen suggests, cyberspace should be conceived as an “extension and evolution of everyday spatial practice – as space neither separate from real space nor simply a continuation of it.”¹⁴⁹ Any regulation of cyberspace, then, must concern the connections between cyberspace and “lived space.”¹⁵⁰

Cohen connects her emphasis on the interfaces between cyberspace and lived space with contemporary theories about perception, cognition, and language.¹⁵¹ Human beings experience physical “space” through embodied perception and employ that

¹⁴⁷ See Floridi, *supra* Note 139.

¹⁴⁸ For a summary of the “place” and “space” debates, see Julie E. Cohen, *Cyberspace as/and Space*, 107 Colum. L. Rev. 210, 211-12 (2007). As Cohen notes, some critics of the “place” and “space” metaphor suggest that the Internet is merely a communications network and that metaphors of place and space “are the product of a mass delusion...” *Id.* at 211. Other critics mount a postmodern critique of “place” and “space” as tools of violence and power. *Id.*

¹⁴⁹ *Id.* at 212-13.

¹⁵⁰ *Id.* at 213.

¹⁵¹ *Id.* at 227-28.

relative, embodied perception when structuring abstract linguistic constructs.¹⁵² The limitations of human perception and cognition, rooted deep in our “hard wired” biology, shape the language we use to characterize abstract ideas.¹⁵³ Our experience of and language about “cyberspace” must then also be connected to our physical, embodied experience.¹⁵⁴ We cannot construct language any other way.

Cohen contrasts this cognitive theory perspective against different strands of postmodern critique of “space.” The first strand of postmodern critique, Cohen says, claims that “what we experience as reality is social construction all the way down.”¹⁵⁵ Cyberspace, in this view, has ontological status, like anything else, as a pure social construction, meaning that it is not an inevitable outcome and could be entirely deconstructed. The second strand of postmodern critique, however, takes the social construction of “space” as contingent on some given aspects of the human condition and therefore as inevitable.¹⁵⁶ The task, then, is not to deconstruct “space” per se, but rather to understand how space (including cyberspace) is structured by power, desire, and other human impulses.¹⁵⁷

Cohen artfully marries cognitive theory to this second strand of postmodern critique of “space” and concludes that “[t]he cyberspace metaphor is neither an arbitrary fiction that can be jettisoned nor a description of some fixed, external reality, but rather

¹⁵² *Id.* at 228.

¹⁵³ *Id.*

¹⁵⁴ *Id.* at 229.

¹⁵⁵ *Id.* at 232.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

an inevitable perceptual byproduct of the human cognitive apparatus.”¹⁵⁸ The key question for legal theory, then, is “how cyberspace changes experienced space.”¹⁵⁹

Cohen sketches out how this notion might impact our view of cyberspace as a commons. Although legal theorists who have wed information theory to Jefferson’s candle think of the digital commons as infinitely plastic, the physical reality is that information flows across networks are not in fact so malleable.¹⁶⁰ Thus, Cohen says, “[c]yberspace’s difference is neither fixed nor unidirectional, but manifests as a problematic and always emergent tension between a broadening out and a closing in of boundaries and networks.”¹⁶¹ Cohen suggests that legal theory could learn from the more flexible approaches found in science and technology studies (STS).¹⁶² In particular, Cohen notes, the “new Chicago school” of legal theory still tends to think of technology and Code as a black box, whereas STS understands that new technologies “have no ‘natural edges,’ but instead serve as focal points around which the self-interested behaviors of existing groups coalesce.”¹⁶³ New technologies are not like Jefferson’s disembodied candle, nor are they like Shannon’s disembodied code. Rather, “new technologies are experienced, learned, and assimilated by and through the body, no less so by experts than by the uninitiated.”¹⁶⁴

¹⁵⁸ *Id.* at 234.

¹⁵⁹ *Id.* at 235.

¹⁶⁰ *Id.* at 239.

¹⁶¹ *Id.* at 240.

¹⁶² *Id.* at 250.

¹⁶³ *Id.* at 251 (quoting Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century* 4-8 (1988)).

¹⁶⁴ *Id.* at 254.

Both the raging debates about the ontology of information in the philosophy of information discipline, and the deeper account of embodiment and technology offered by Julie Cohen and STS, suggest that information theory cannot save Jefferson's candle. The efforts of Benkler, Lessig, Frischman, and others to employ the tools of economics, viewed through the lens of information theory and the romantic author critique, in the service of distributional concerns, are encouraging, but ultimately inadequate. It is necessary, but not sufficient, to examine information's function as disembodied code which functions like a non-rival economic resource. It is equally important to examine information's embodied, rivalrous social properties. However conceived, information theory alone does not save the Enlightenment project concerning what information is and how it should be made available. We need a thicker account of information, which considers its very human tacit dimensions. In the next section, I move towards such an account, drawing the critical realist insights of Roy Bhaskar and Michael Polanyi.

VII. THE TACIT DIMENSION AND SOCIAL RIVALRY

Julie Cohen's insights about technology, information and embodiment suggest fruitful avenues of discussion. A weakness in Cohen's discussion, however, is a common weakness of all constructivist approaches: the problem of grounding. My critique of Jefferson's candle naturally suggests a constructivist account of the sorts of scientific and technical information with which intellectual property is often concerned. Bruno Latour, for example, argues that "[w]e do not conceive of scientists... as pulling back the curtain on pre-given, but hitherto concealed truths. Rather, objects (in this case, substances) are

constituted through the artful creativity of scientists.”¹⁶⁵ Latour’s critique resonates in many ways with my critique of the Enlightenment foundations of intellectual property.

Constructivism as an overarching philosophy, however, suffers from numerous deficits.¹⁶⁶ For example, contrary to a strong constructivist stance, some propositions might be true even if most people do not agree to them – if only one person in a crowd agrees that a bomb is about to go off, the agreement of the rest of the crowd to the contrary will not stop the explosion.¹⁶⁷ Moreover, strong constructionist accounts place too much faith in the power of human noetic capabilities. The strong constructionist cannot defeat the possibility that a deeper and more complex reality lies beyond the grasp of that which humans are able to grasp.¹⁶⁸ Finally, and perhaps most damningly, strong constructionism results in an infinite regress.¹⁶⁹

As Alvin Goldman notes, however, there is merit to some constructivist arguments even if strong constructivism fails.¹⁷⁰ Even one who accepts a realist view of the universe and a correspondence-based epistemology must acknowledge that what human beings are capable of knowing about the universe is mediated to us through the limited tools of human perception and language.¹⁷¹ Rather than Latour’s strong

¹⁶⁵ Bruno LaTour, *LABORATORY LIFE: THE CONSTRUCTION OF SCIENTIFIC FACTS* (Princeton Univ. Press 1986), at 129.

¹⁶⁶ *See, e.g.*, Alvin I. Goldman, *KNOWLEDGE IN A SOCIAL WORLD* (Clarendon Press 1999), at 10-22.

¹⁶⁷ *Id.* at 12.

¹⁶⁸ *Id.* at 16.

¹⁶⁹ *Id.* at 16.

¹⁷⁰ *See id.* at 21.

¹⁷¹ *Id.* (stating “[t]he thought contents we consider and accept are rarely ‘given’ to us by the (nonhuman) world. They result from our own biological resources and linguistic activities; in that sense, they are human constructs or products. Since knowledge involves belief, and belief is in contents that are so constructed, there is merit to the claim that knowledge is (partly) a social construct.”). Goldman argues generally for a correspondence view of truth. *Id.* at 42-68. It is beyond the scope of this paper to enter into

constructivist position, or the variations of postmodern constructivism towards which Cohen is leaning, then, the core of my proposal is a sort of “critical realism” concerning how human knowledge is acquired, which shares more in common with philosophers of science such as Michael Polanyi and Roy Bhaskar.¹⁷²

Critical realists recognize that there is a reality external to human mind and language. According to Bhaskar, reality can be conceived as three-layered: empirical (observable by human), actual (existing in time and space) and real (“transfactual and enduring more than our perception of it”).¹⁷³ Human perception of reality is a “transitive” dimension because it is subject to change based on human language, history and culture.¹⁷⁴ Reality itself, however, is “intransitive.”¹⁷⁵

Bhaskar thus emphasized the social aspects of human knowing – of information – without reducing all of reality to a human construction. An important aspect of Bhaskar’s social theory of knowledge is his rejection of “methodological individualism” – the notion that societies are reducible to individuals.¹⁷⁶ A “social atomism” in which the analysis of societies can be reduced to the preferences of individuals will never adequately explain social action.¹⁷⁷ But neither is society merely the result of collective

broader debates about various theories of truth. It is sufficient for my purposes to note that a critical perspective on the Enlightenment foundations of intellectual property does not necessarily require a radically anti-realist epistemology.

¹⁷² See generally, Roy Bhaskar, *A REALIST THEORY OF SCIENCE* (Verso 2nd Ed. 1997); Michael Polanyi, *THE TACIT DIMENSION* (Peter Smith 1983).

¹⁷³ Bhaskar, *supra* Note 172, at 21-62.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

pressures on individuals, or a simple dialectic between these two poles.¹⁷⁸ Rather, society has a dual character: social groups provide the ground through which individuals reproduce and sometimes transform society.¹⁷⁹

Like Bhaskar, Michael Polanyi sought to mitigate the destructive tendencies of positivism without destroying the normativity of science. One of Polanyi's primary concerns was danger of authoritarian control over science extant in the then-communist East. Polanyi was keen to demonstrate that science is an inherently social enterprise just like any other human project, and that as a social enterprise science must be subject to democratic control.¹⁸⁰

Polanyi recognized that positivism fails because it relies on some unverifiable foundations. As Polanyi noted, "It is indeed logically impossible for the human mind to divest itself of all uncritically acquired foundations. For our minds cannot unfold at all except by embracing a definite idiom of beliefs, which will determine the scope of our

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ Polanyi explains this concern at the beginning of one of his key works, *The Tacit Dimension*. Describing the denial of independent science under communism, Polanyi says "I was struck by the fact that this denial of the very existence of independent scientific thought came from a socialist theory which derived its tremendous persuasive power from its claim to scientific certainty. The scientific outlook appeared to have produced a mechanical conception of man and history in which there was no place for science itself." *THE TACIT DIMENSION* (Peter Smith 1983), at 3. Polanyi's views, of course, were not entirely unique; they fit nicely into a constellation of contemporary philosophers of science who deconstructed the positivism that emerged following the collapse of Baconian science, including figures such as Thomas Kuhn, Imre Lakatos, and to some extent Paul Feyerabend. *See, e.g.*, Kuhn, *supra* Note 60; Imre Lakatos, *THE METHODOLOGY OF SCIENTIFIC RESEARCH PROGRAMMES* (Cambridge Univ. Press 1980); Paul Feyerabend, *AGAINST METHOD* (Verso 3d ed. 1993).

entire subsequent fiducial development.”¹⁸¹ The notion of positivism itself, then, depends on an idiomatic structure that is neither verifiable nor self-evident.

Polanyi also emphasized the communal nature of scientific practice and the “tacit” knowledge involved in such communal information transfers. As he noted, “[t]he transmission of beliefs in society is mostly not by precept, but by example . . . [t]he whole practice of research and verification is transmitted by example and its standards are upheld by a continuous interplay with criticism within the scientific community.”¹⁸² Thus, scientific knowledge is a set of socially constructed analogical models that are developed through practices acquired and implemented in unique social networks.

Finally, Polanyi realized that the social networks through which scientific practices are transferred, like all social networks, incorporate elements of social control. One of the principal means of control over scientific information networks is peer review. Polanyi observed that scientific journal referees “are the chief Influentials, the unofficial governors of the scientific community. By their advice they can either delay or accelerate the growth of a new line of research.”¹⁸³

¹⁸¹ Michael Polanyi, STSR.

¹⁸² Michael Polanyi, STSR at 61.

¹⁸³ SSTR at 19-21. Polanyi stated that:

The referees advising scientific journals may also encourage those lines of research which they consider to be particularly promising, while discouraging other lines of which they have a low opinion. The dominant powers in this respect are, however, exercised by referees advising on scientific appointments, on the allocation of special subsidies, and on the award of distinctions. Advice on these points, which often involve major issues of the policy of science, is usually asked from and tendered by a small number of senior scientists who are universally recognized as being the most eminent in a particular branch. They are the chief Influentials, the unofficial governors of the scientific community. By their advice they can either delay or accelerate the growth of a new line of research .

Id. Cf. Smolin, *supra* Note 72.

Under a critical realist view, then, scientific information is not exactly like the flame on Jefferson's candle, burning in the open, available to be shared equally among any other candles that might be pointed towards the light. In the language of critical realism, Jefferson's candle captures the intransitive aspects of reality, but it does not reflect the transitive, socially embedded aspects of human science.

The truth is that "the progress of science and the useful arts" often is more like a poker game than a candle. There is indeed a deeper structure that underlies the game – the basic rules of probability that constrain the possible configurations of hands -- which all the players can share, and in fact must take as a "given."¹⁸⁴ But there are also aspects of the game that are socially constructed – the specific rules of Texas Hold 'em Poker. And, there are very particular aspects of the game that are embodied in local tacit knowledge – the slight incline of a player's head that signals a bluff, the way a pattern of bets suggests whether to "hold 'em" or "fold 'em" (or run), the "feel" of the room with its sub-conscious chemical and emotional signs, the intuition that comes from experience.¹⁸⁵

¹⁸⁴ Thanks to Charles Sullivan for this insight.

¹⁸⁵ Polanyi makes a similar point concerning the game of chess:

The playing of a game of chess is an entity controlled by principles which rely on the observance of the rules of chess; but the principles controlling the game cannot be derived from the rules of chess. The two terms of tacit knowing, the proximal, which includes the particulars, and the distal, which is their comprehensive meaning, would then be seen as two levels of reality, controlled by distinctive principles. The upper one relies for its operations on the laws governing the elements of the lower one in themselves, but these operations of it are not explicable by the laws of the lower level. And we could say that between the two such levels a logical relation holds, which corresponds to the fact that the two levels are the two terms of an act of tacit knowing which jointly comprehends them.

Polanyi, THE TACIT DIMENSION, *supra* Note 180, at 34-35.

It simply is not true that a new player could read a patent disclosure on Texas Hold ‘em Poker and thereby possess exactly the same “flame” as the long-time players.¹⁸⁶

The same is true of the “progress of science and of the useful arts.” As Polanyi observes, the relationship between laypeople and scientists, and between scientists of different disciplines, is based on authority.¹⁸⁷ Only a very limited set of people with specialized training, experience, and equipment, can effectively test most scientific claims.¹⁸⁸ It is not possible to read a journal article or a patent and to truly “possess” the flame of knowledge flickering within it.¹⁸⁹ Scientists must participate in a system of “mutual control” that involves consensual oversight based on something less than full possession of each other’s ideas.¹⁹⁰

In many ways, this recognition of the social aspects of the scientific enterprise resonates with the “romantic author” critique. As Polanyi has noted, “[t]he most daring

¹⁸⁶ A similar analogy could come from golf (or any other game or sport). If Tiger Woods wrote a patent describing his golf game, I could not possess his swing by reading it. Even if I could modify my body to gain all of Tiger’s physical strength and coordination so that I could technically reproduce his swing mechanics – a substantial modification indeed – I would not be able to *play golf* like Tiger. Sports psychologists refer to tacit skills such as “field awareness” and “flow” to describe the “something extra” that great champions possess as a result of a mysterious blend of physical, intellectual and emotional makeup, practice, and experience. See Mihaly Csikzentmihalyi, *FLOW* (Rider & Co. 2002); Susan A. Jackson and Mihaly Csikzentmihalyi, *FLOW IN SPORTS: THE KEY TO OPTIMAL PERFORMANCES AND EXPERIENCES* (Human Kinetics Publishers 1999).

¹⁸⁷ Polanyi, *Tacit Knowledge*, *supra* Note 180 at 63-64.

¹⁸⁸ *Id.* at 62.

¹⁸⁹ As Polanyi notes,

In the first place, you cannot possibly get hold of the equipment for testing, for example, a statement of astronomy or of chemistry. And supposing you could somehow get the use of an observatory or a chemical laboratory, you would probably damage their instruments beyond repair before you ever made an observation. And even if you should succeed in carrying out an observation to check upon a statement of science and you found a result which contradicted it, you would rightly assume that you had made a mistake,

Id. at 63-64.

¹⁹⁰ *Id.* at 72-74.

innovations of science spring from a vast range of information which the scientist accepts unchallenged as a background to his problem.”¹⁹¹ It differs from the romantic author critique, however, in its ontological realism. According to Polanyi, a scientist’s research decisions “are personal judgments exercised responsibly with a view to a reality with which he is seeking to establish contact.”¹⁹² In this sense, the practice of a scientific discipline is a tradition that is continually being extended towards the goal of better understanding the aspects of reality with which it is concerned.¹⁹³

Contemporary intellectual property theory has been impoverished by its failure to recognize the tacit and social dimensions of knowing. We have been grounded on the shoals of a narrow Enlightenment epistemology and philosophy of science, enchanted by siren modern information theory, and stuck in the lee of what Bhaskar called “methodological individualism.” As a result, our debates about policy tend to founder over unanswerable empirical questions. Either that or we retreat to a critique of authorship grounded in a constructionist ontology that empties any notion of the “*progress of science and the useful arts*” of any real meaning.

¹⁹¹ *Id.* at 80.

¹⁹² *Id.* at 77. Moreover, Polanyi notes, this effort to contact external reality is not limited to efforts to obtain scientific knowledge. It “holds for all seeking and finding of external truth.” *Id.*

¹⁹³ *Id.* at 82. Polanyi notes the progressive nature of the tradition: “[s]cientific tradition derives its capacity for self-renewal from its belief in the presence of a hidden reality, of which current science is one aspect, while other aspects of it are to be revealed by future discoveries.” *Id.* Progress, however, is not necessarily linear: “[a]ny tradition fostering the progress of thought must have this intention: to teach its current ideas as stages leading on to unknown truths which, when discovered, might dissent from the very teachings which engendered them.” *Id.* As discussed briefly in Section V below, the notion of science as a “tradition” leads nicely into a virtue ethics approach to intellectual property policy. See also David W. Opperbeck, *A Virtue-Centered Approach to the Biotechnology Commons (Or, The Virtuous Penguin)*, 59 *Maine L. Rev.* 316 (2007).

It does not have to be this way. In fact, most other areas of the law that concern the regulation of access to information primarily concern social relationships. In the next Section, I discuss other areas of the law in which the social context of information exchange plays a central role. I will briefly describe and critique the dominant pragmatic-economic approach to each of these areas, as well as competing social constructivist and contractarian approaches. I will then explain how each of these information-centric areas of the law can be seen through a critical realist lens of social rivalry. Following that discussion, I will offer some concluding thoughts on how an intellectual property policy that recognizes social rivalry and tacit knowledge might look.

VIII. SOCIAL RIVALRY AND TRADE SECRETS, INSIDER TRADING, AND PRE-CONTRACT DISCLOSURES

Contemporary debates about access to information are most heated concerning the “hard” intellectual property disciplines of copyrights and patents, the law of privacy, and the regulation of “cyberspace” and computer networks. Each of these areas draw on the Enlightenment and information-theoretic notions of disembodied information discussed above. Other areas of the law that are centrally concerned with regulation of information, however, seem to reflect a thicker understanding of information as socially embodied. The next sub-sections discuss three such areas: trade secrets, insider trading, and pre-contract disclosures.

D. SOCIAL RIVALRY AND TRADE SECRETS

It is notoriously difficult to justify trade secret protection.¹⁹⁴ Trade secrets were originally justified by formalist courts as an aspect of good will in a business that constitutes a form of “property.”¹⁹⁵ These early cases conceive of trade secrets as ideas that can be “possessed.”

In *Bristol v. Equitable Life Assurance Society*, a case decided just before the turn of the century, for example, the plaintiff tried to induce the defendant to purchase his method for marketing insurance.¹⁹⁶ The court distinguished this case from one involving a creative work or an invention because creative works and inventions “can, by multiplying copies, be put to marketable use and [their] exclusive ownership [can] be easily preserved and protected.”¹⁹⁷ In contrast, according to the court, a sales method, once disclosed and put to use, is no longer “possessed” by its originator.¹⁹⁸ It is not reducible to some tangible original form, like a book or a machine, which remains in the originator’s possession even if subsequent copies are made.¹⁹⁹

The theme of property-as-possession of an idea is also reflected in *Haskins v. Ryan*,²⁰⁰ another trade secret case decided near the turn of the century. Haskins

¹⁹⁴ See, e.g., Robert G. Bone, *New Look at Trade Secret Law: Doctrine in Search of Justification*, 86 Cal. L. Rev. 241 (1998).

¹⁹⁵ *Id.* at 251-58.

¹⁹⁶ *Id.* at 266-67.

¹⁹⁷ *Id.* at 267,

¹⁹⁸ *Id.*

¹⁹⁹ See *id.*

²⁰⁰ *Haskins v. Ryann*, 71 N.J. Eq. 575 (1906).

demanded an accounting of profits from a business plan he had disclosed to Ryan.²⁰¹ The court rejected Haskins' claim that the business plan was a form of property. A business plan, the court noted, "depend[s] for its realization upon the concurring minds of many individuals, each of them unbound by contract and free to act as he cho[oses]."²⁰² Therefore, the plan, once disclosed, lacked "that dominium, that capability of being applied by its originator to his own use, which is the essential characteristic of property."²⁰³ In contrast, the originator of a "secret process of manufacturing" can enjoin another from "putting the idea formulated to practical account," but only for so long as the process remains secret.²⁰⁴ While the idea remains secret, it is possessed by its originator.

All of these early formalist cases all share in the deep common law tradition that "first possession is the root of title."²⁰⁵ As Carol Rose has noted, the common law "first possession" concept recurred, at least before instrumentalist theories of property came to dominate the courts, whenever people began to claim rights in previously untapped resources, such as oil, gas and groundwater.²⁰⁶

For these early courts, then, as for Thomas Jefferson and his contemporaries, an idea was like oil, gas or groundwater. Each were "things," ontologically separate from human history, society, and language, to be appropriated. The way to "possess" an idea was to keep it secret, just as one could "possess" a vast groundwater reservoir by erecting

²⁰¹ *Id.* at 575-77.

²⁰² *Id.*

²⁰³ *Id.* at 580.

²⁰⁴ *Id.* at 578-79.

²⁰⁵ Carol M. Rose, *Possession as the Origin of Property*, 52 U. Chi. L. Rev. 73, 75 (1985).

²⁰⁶ *Id.* at 75.

wells and fences. There is no notion at all in these early “possession” trade secret cases of romantic authorship. The originator of an idea is not, in these cases, rewarded for his singular brilliance. Rather, the originator of an idea obtains a common law property right by *hiding* his brilliance.

Subsequent efforts to justify trade secret law focused on efficiency concerns.²⁰⁷ The possibility of trade secret protection, like the prospect of patent protection, perhaps ameliorates a possible free rider problem and provides incentives to create.²⁰⁸ This argument relies on the public goods character of information.²⁰⁹ A significant problem with this argument, however, is that many categories of information that might be protectible by trade secrets already are protectible by copyrights and patents.²¹⁰ It is unclear what, if any, additional incentive trade secret protection adds. Even more significantly, as the *Elm City Cheese* case discussed below illustrates, many trade secret claims involve “confidential” information that a business must produce regardless of any marginal incentive a cause of action for trade secret infringement might provide.²¹¹

Another possible efficiency justification for trade secrets is that the deterrence effect of a possible cause of action lessens indirect and transaction costs for firms that create valuable information.²¹² If firms could not enforce trade secret claims, for example, they might need to hire fewer people who will have access to secret

²⁰⁷ Bone, *supra* Note 194, at 262-83.

²⁰⁸ *Id.* at 262-63.

²⁰⁹ *Id.*

²¹⁰ *Id.*

²¹¹ See *infra* Notes ___ and accompanying text.

²¹² *Id.* at 272-83.

information.²¹³ This justification, however, seems undercut by data suggesting that trade secret enforcement costs – the costs of prosecuting trade secret claims – are rising rapidly.²¹⁴ The possibility of a lawsuit apparently has not had a significant deterrent effect, and the costs of prosecution may outweigh the benefits achieved by any deterrence that is occurring.²¹⁵ Moreover, in order to demonstrate the existence of a trade secret, the plaintiff must show that it has taken adequate steps to preserve the secrecy of the information.²¹⁶

Some commentators have instead tried to analyze trade secrets using a contractarian fairness analysis. Kim Lane Scheppelle has argued that “[t]he secret is the social mechanism through which the interests and intentions of particular social actors, making decisions in their daily lives, become translated into inequalities of knowledge.”²¹⁷ A secret, Scheppelle says, is “a property of a relationship.”²¹⁸ Secrets can both preserve individual autonomy and undermine autonomy by facilitating manipulation of others by secret-holders.²¹⁹ At the broader social level, secrets can promote inequality among individuals and classes of people.²²⁰ Secrets “provide the

²¹³ *Id.* at 274-75.

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *See, e.g.*, UNIFORM TRADE SECRETS ACT, § 1(4); RESTATEMENT (THIRD) OF UNFAIR COMPETITION, § 39.

²¹⁷ Kim Lane Scheppelle, *LEGAL SECRETS* (Univ. of Chicago Press 1988) at 23.

²¹⁸ *Id.* at 301.

²¹⁹ *Id.* at 303-04.

²²⁰ *Id.* at 306.

rough draft of social structure.”²²¹ Exclusive social structures require shared knowledge that is not readily accessible to outsiders.²²²

Scheppelle notes that the strategic, social aspects of secrets renders them more amenable to game theoretic analysis than to classical economic theory.²²³ Under a game theoretic analysis, a secret has strategic value “when the interests of the actors involved are not perfectly coincident, when there is an asymmetry of relevant information that the secret-keeper knows will be important to the target, and when something the target can do or refrain from doing would affect the well-being of the secret-keeper.”²²⁴ The decision whether to keep information secret also depends on the costs to the secret keeper.²²⁵ The cost calculation is complex and involves considerations of the risk that the secret will be found out and the threat of retaliation if the secret is discovered.²²⁶ Scheppelle argues that legal regulation of these complex considerations can best be negotiated through a Rawlsian contractarian paradigm rather than through the univocal posture of classical economics.²²⁷ Although Scheppelle’s Rawlsian paradigm is deficient, she is right to recognize the socially rivalrous aspects of trade secrets.

²²¹ *Id.* at 307.

²²² *Id.*

²²³ *Id.* at 43-45.

²²⁴ *Id.* at 48.

²²⁵ *Id.* at 49.

²²⁶ *Id.* at 49-53. The risk of discovery depends on “(a) the existing distribution of information; (b) the density of the information network; (c) the length of time the secret must be kept; and (d) the search behavior of the target of the secret.” *Id.* at 49. The risk of retaliation depends on whether the parties have an ongoing relationship that would be threatened by secret-keeping and whether legal or social norms can be invoked to sanction the secret-keeper. *Id.* at 51.

²²⁷ *Id.* at 63-85.

Robert Bone argues that Scheppelle's Rawlsian approach relates almost exclusively to breach of confidence cases, which are better addressed as simple breaches of contract.²²⁸ Moreover, Bone echoes broader critiques of Rawlsian principles.²²⁹ These include the problem of whether any parties situated behind the Rawlsian veil would indeed choose the sorts of non-disclosure principles Scheppelle advocates, and the deeper problem of grounding and legitimacy – the question why a party whose preferences are not agreed upon in the social bargaining process should be compelled to abide by the social contract.²³⁰ Bone suggests that trade secret law is largely unsupportable as a separate body of law and should mostly collapse into a matter of private contract.²³¹

Through all these permutations of how trade secret protection has been justified, the elements of a trade secret claim have remained relatively constant.²³² In particular, courts have always recognized that, to be protectible, an alleged trade secret “must confer a competitive advantage when kept secret.”²³³ Whether viewed through a formalist lens as a type of “possession,” through a realist lens as a way of preventing free-riding to incentivize innovation, through a contractarian lens as the sort of rule parties in the original position would choose, or through a deontological lens as a rule that helps preserve autonomy and privacy, “competitive advantage through secrecy” has remained a constant.

²²⁸ Bone, *supra* Note 194, at 292.

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.* at 303-04.

²³² *See id.* at 248-49.

²³³ *Id.* at 248.

While all these lenses represent ways in which courts and commentators have filtered trade secret claims, there is another unrecognized frame that contains them all: information, when kept secret, is rivalrous because of how it is socially, historically and linguistically constructed, and this aspect of social rivalry gives secret information its true value. The deep flaw in each of these trade secret interpretive lenses is that they view information as some sort of ontological “thing” apart from the social networks that create it. The formalist common law approach to trade secrets reflects the common sense Enlightenment presuppositions that inform much of the common law, including the Newton-Bacon-Locke synthesis about nature and scientific knowledge. All of the subsequent approaches try to respond to that formalist common law approach, but without examining those underlying presuppositions. As a result, they all, to varying degrees, miss the mark, and we remain today without a compelling theoretical explanation for trade secret law. The deeper explanation is one rooted in social rivalry.

An excellent illustration of this dynamic is found in *Elm City Cheese Co., Inc. v. Federico*,²³⁴ a run-of-the-mill trade secret case decided by the Connecticut Supreme Court in 1999. Elm City Cheese Co. manufactured and sold grated cheese.²³⁵ It had only three major customers, which used its cheese as “filler” for other cheese products.²³⁶ It held no patents and had no revolutionary secret formulas. Its biggest innovation seemed to be the use of “return milk” to make cheese and the installation of a dehumidifier to dry

²³⁴ 752 A.2d 1037 (1999).

²³⁵ *Id.* at 1040.

²³⁶ *Id.*

the cheese quickly.²³⁷ At first reading, the use of “return milk” sounds like an interesting technology, but as a footnote in the court’s opinion makes clear, “return milk” is simply milk that is past its sell-by date for ordinary consumption, which means it sells at a discount.²³⁸ Elm City alleged that the defendant, Mark Federico, pilfered this “unique” process for making cheese, along with price and cost information, knowledge of supplier and customer relationships, and ordinary accounting practices.²³⁹

Why would such a case result in an award of punitive damages, attorneys’ fees, and a three-year non-competition injunction, all affirmed by the State’s highest court? Because of the social context of the alleged secrets. Federico had been friends with the Weinstein family, which owned Elm City, since youth.²⁴⁰ He had been taken on by the cheese business more than fifteen years before the dispute arose after he failed to make partner at an accounting firm.²⁴¹ He eventually was given the keys to the building, authorized to make corporate decisions, and made a corporate Vice President. The trial court found that Federico had become a “trusted advisor and confidant” and more: he “effectively became a member of the family, virtually the ‘number one son.’”²⁴² But the

²³⁷ *Id.* at 1040-41.

²³⁸ *Id.* at 1040 n. 5. In an opinion dissenting in part and concurring in part, Justice McDonald rejected the argument that the use of “returned” milk could qualify as a trade secret. *Id.* at 1061. As Justice McDonald noted, “[t]hat stale milk, no longer having retail value, would be cheaper to purchase than fresh milk is ... common knowledge. Moreover, there was no evidence before the trial court that Elm City did anything to safeguard the business practice of purchasing returned milk with which to make cheese. Elm City, in fact, had no restrictive agreement with any employee about anything. Thus, the purchase of returned milk from a number of dairies does not qualify as a trade secret.” *Id.*

²³⁹ *Id.* at 1041.

²⁴⁰ *Id.* at 1040.

²⁴¹ *Id.*

²⁴² *Id.*

relationship deteriorated over disputes about Federico’s use of the corporation to employ his own family members and over an alleged contract to sell the business to Federico.²⁴³

The Connecticut Supreme Court avoided directly addressing the question whether any of the alleged trade secrets were truly kept confidential.²⁴⁴ Instead, the court focused on the “unique” social context of the plaintiff’s business.²⁴⁵ The key fact was the “unique relationship between Elm City and its suppliers and customers,” by which Elm City purchased from only a few suppliers and sold to only a few customers.²⁴⁶

It is impossible to read *Elm City* as a case about a free rider problem. Federico was hardly a free rider – he was a substantial contributor to the business’ value over fifteen years of service. Moreover, there is no indication that Elm City would not have invested its time and capital in the business but for the formal rules of trade secrets. Indeed, Elm City seems to have been oblivious to those rules, since it took no formal steps to protect the allegedly secret information.

Rather than any formalities of trade secret law, it was the close social networks between Federico and the Weinstains, and between Elm City and its suppliers and customers that produced the value subsisting in Elm City’s business information. The “trade secret” had no ontological status apart from its social context. Destroying the social context was tantamount to destroying this socially constructed entity and all its attendant economic value. As an economic resource, then, Elm City’s business

²⁴³ *Id.* at 1041.

²⁴⁴ *See id.* at 1045-48.

²⁴⁵ *Id.* at 1048 (noting that “[c]entral to the trial court’s ultimate finding that Elm City’s business plan constitutes a trade secret, is the court’s finding the Elm City’s business is unique.”).

²⁴⁶ *Id.* at 1048-49.

information was in a very real sense rivalrous. Sharing or using this information broke the web of social relationships that created the “secret,” and thereby destroyed the secret. The flame was not passed from candle to candle; it was extinguished.

The *Elm City* case is not unique in this regard. Indeed, one of the fascinating things about the *Elm City* case is just how mundane it is. Trade secret cases involving generic information such as basic manufacturing processes, customer lists, and sourcing and pricing data, almost inevitably turn on the destruction of a socially constructed secret – a secret that lacks value apart from that which is imparted to it by a web of social relationships.²⁴⁷ In this sense, most trade secret cases involve information that can be considered rivalrous in consumption.

B. SOCIAL RIVALRY AND INSIDER TRADING

Insider trading law also deals with a type of socially constructed rivalrous information. The Securities Exchange Act of 1934 states that it is unlawful for a “insider” to trade on “material non-public information.”²⁴⁸ In *Chiarella v. United States*, the Supreme Court had to determine who is an “insider.”²⁴⁹ The defendant in *Chiarella* worked for a financial printer.²⁵⁰ He was able to deduce the names of target companies based on documents his company was hired to print, and purchased shares in the target companies based on this information.²⁵¹ The court held that defendant was not liable for

²⁴⁷ As sociologist Kim Lane Scheppelle has observed, “secrets are always located in particular social contexts.” Kim Lane Scheppelle, *LEGAL SECRETS* (Univ. of Chicago Press 1988).

²⁴⁸ 15 U.S.C. § 78 *et seq.*

²⁴⁹ *Chiarella v. United States*, 445 U.S. 222 (1980).

²⁵⁰ *Id.* at 224.

²⁵¹ *Id.*

insider trading because he had no fiduciary or confidential relationship with the corporation or its shareholders.²⁵²

This principle was taken up again by the Court in *Dirks v. Securities and Exchange Commission*.²⁵³ The defendant in *Dirks*, an officer of a broker-dealer firm, received inside information about the fraudulent overstatement of assets by Equity Funding, a life insurance and mutual fund company.²⁵⁴ Defendant disclosed the information in an effort to investigate and expose the fraud.²⁵⁵ Existing shareholders of Equity Funding who learned of the defendant's allegations dumped their shares, depressing the company's share price.²⁵⁶ A state insurance department investigation, and forcing the company into receivership.²⁵⁷

The SEC sought to hold the defendant liable on an "information" theory of tippee liability – that is, that any disparity of information among traders arising from the disclosure of nonpublic information constitutes a violation.²⁵⁸ The Court rejected this theory because "[a] duty [to disclose] arises from the relationship between the parties . . . and not merely from one's ability to acquire information because of his position in the market."²⁵⁹ Insiders are "forbidden by their fiduciary relationship" from personally using corporate information and from disclosing it to others.²⁶⁰

²⁵² *Id.*

²⁵³ 463 U.S. 646 (1983).

²⁵⁴ *Id.* at 648-49.

²⁵⁵ *Id.* at 649-51.

²⁵⁶ *Id.* at 650.

²⁵⁷ *Id.* at 650.

²⁵⁸ *Id.* at 657.

²⁵⁹ *Id.* at 657-58 (quoting *Chiarella*, 445 U.S. at 232-33 n. 14).

²⁶⁰ *Id.* at 659.

According to the *Dirks* Court, Tippees assume an insider's fiduciary duty to shareholders only when the tippee receives corporate information "improperly," meaning the tippee "knows or should know that there has been a breach" of the insider's duty.²⁶¹ Since there is only a breach of the insider's fiduciary duty when there is a possibility of personal benefit to the insider, a disclosure of information in an effort to expose a fraud is not a breach of the insider's duty, and by extension a tippee who receives the information also cannot be liable.²⁶² The defendant in *Dirks*, then, the Court held, cannot be liable as a tippee. He received and disseminated corporate information provided to him in an effort to stop a financial fraud. The disclosure did not benefit the tipper in violation of any fiduciary duty, so the defendant, by extension, is innocent of any violation.

As told by the *Dirks* majority, this story makes perfect sense. It would be perverse indeed if the threat of insider trading liability dissuaded people from disclosing information in order to expose and prevent fraud. An anti-fraud rule would then facilitate fraud.

It is illuminating, however, to read Justice Blackmun's version of the facts in his dissent.²⁶³ According to Justice Blackmun, *Dirks* only "selectively disclosed" to his clients the information he had gathered.²⁶⁴ *Dirks* provided a "'hard' story-all the allegations" to his clients that held Equity Funding securities.²⁶⁵ To other clients, *Dirks* provided only vague information, and his efforts to provide information to non-clients,

²⁶¹ *Id.* at 660.

²⁶² *Id.* at 662-63.

²⁶³ *Id.* at 667-71. Justice Blackmun's dissenting opinion was joined by Justices Brennan and Marshall. *Id.* at 667.

²⁶⁴ *Id.* at 669-70.

²⁶⁵ *Id.* at 670.

including the financial press, Justice Blackmun said, “were feeble, at best.”²⁶⁶ In other words, in Justice Blackmun’s view, Dirks took advantage of the situation to distort the market for the benefit of his clients.

How can cases like *Chiarella* and *Dirks* be explained as a form of information policy? The justification for insider trading rules, like the justification for trade secrets, is notoriously difficult to articulate.

James Boyle suggests that the economic critique of insider trading rules reflects the “romantic author” notion because our culture valorizes entrepreneurs.²⁶⁷ At base, Boyle argues, those who criticize insider trading rules on economic grounds wish to reward the entrepreneurs whose flashes of insight and originality created the conditions under which inside information has value.²⁶⁸ As Boyle observes, however, valuable inside information also is created when things go wrong.²⁶⁹ Moreover, the “romantic entrepreneur” trope is far removed from the realities of information production in many large commercial enterprises.²⁷⁰ The insider who profits from trading on nonpublic information is as likely to be an incompetent manager or a passive beneficiary of the work of others as she is to be a brilliant innovator.²⁷¹ If insider trading is to be regulated, then, such regulation must rest on other grounds.²⁷²

²⁶⁶ *Id.* at 670.

²⁶⁷ Boyle, *supra* Note 81, at 1503-04.

²⁶⁸ *Id.* at 1506-08.

²⁶⁹ *Id.*

²⁷⁰ *Id.*

²⁷¹ *Id.*

²⁷² *Id.* at 1508.

Kimberly Krawiec has extended Boyle’s postmodern critique of insider trading rules.²⁷³ Krawiec observes that insider trading law – and in fact all contemporary legal regimes concerning information, including intellectual property – reflect a fundamental information aporia.²⁷⁴ The aporia is that information is both a public good and a collective good.²⁷⁵ As a public good, information can be shared among multiple users without increasing the costs of the information.²⁷⁶ This leads to the egalitarian view that information should be freely available without property constraints.²⁷⁷

However, Krawiec notes, because of the public good character of information, “information is often misperceived as somehow infinite or limitless. . . .”²⁷⁸ Information is not infinite or limitless, however, because it is also a collective good.²⁷⁹ As a collective good, information can be copied and disseminated with little marginal cost once it has been produced.²⁸⁰ This gives rise to the free rider problem and to arguments for propertization.²⁸¹

Krawiec suggests that the central heuristic courts and commentators have used to resolving this public good / collective good information aporia is a distinction between “private” and “public” information.²⁸² Under this heuristic, information acquired in the

²⁷³ Kimberly D. Krawiec, *Fairness, Efficiency, and Insider Trading: Deconstructing the Coin of the Realm in the Information Age*, 95 *Nw. U. L. Rev.* 443 (2001).

²⁷⁴ *Id.* at 451-54.

²⁷⁵ *Id.*

²⁷⁶ *Id.*

²⁷⁷ *Id.*

²⁷⁸ *Id.* at 452.

²⁷⁹ *Id.* at 452-58.

²⁸⁰ *Id.* at 454-55.

²⁸¹ *Id.*

²⁸² *Id.* 459-63.

“private” realm, such as that obtained by a corporate insider, is a more likely candidate for propertization than information that is available in the “public” realm, such as market information that is available through the use of a (non-insider) stock analyst.²⁸³

The public / private distinction, however, says Krawiec, has been deconstructed.²⁸⁴ What is considered “private” instead of “public” often depends on socially constructed distinctions in bargaining power, wealth and education.²⁸⁵ The real dividing line between illegal insider trading and the legal use of market information turns on the question of authorship.²⁸⁶ The “insider” who acquires information as a result of breaching a fiduciary relationship, by taking the information from its creator, is not in the mold of a romantic author and her conduct therefore is not rewarded.²⁸⁷ The person who acquires information by means other than a fiduciary breach, in contrast, is viewed as entrepreneurial, original and creative, and the use of such information is therefore permitted.²⁸⁸

Krawiec argues that these distinctions are hollow.²⁸⁹ There really is no “private” sphere of information; investors in the market care only about how the information affects the market, not whether it was acquired through breach of a fiduciary duty; and

²⁸³ *Id.*

²⁸⁴ *Id.* at 462-63.

²⁸⁵ *Id.* at 462.

²⁸⁶ *Id.* at 464-65.

²⁸⁷ *Id.* at 474-75 (stating “[b]ecause the gathering of information through a fiduciary breach is not considered socially productive behavior, there is no identifiable romantic author whose diligence and effort must be rewarded through permission to profit from such informational advantages.”).

²⁸⁸ *Id.* (stating “nonpublic information gained through means other than a fiduciary breach is considered socially useful research that must be rewarded by permitting the information possessor to profit from her superior trading knowledge.”).

²⁸⁹ *Id.* at 475-76.

the fiduciary duty rule produces wildly inconsistent results.²⁹⁰ Krawiec proposes instead that disclosure rules concerning outsiders who acquire inside information should be left to private contract law.²⁹¹ Absent a non-disclosure agreement, an outsider would be free to disclose information to third parties, and those third parties would be free to trade on that information.²⁹²

The romantic author critique of insider trading rules holds some promise. Boyle's observation about the celebration of entrepreneurs in contemporary culture hits the mark. Krawiec is on the right track when she notes that something does not ring true in the traditional public goods story of information.

But the romantic author critique of insider trading rules ultimately founders on the same shoals as the critique of copyright law: the soundness of the historical and philosophical basis is not at all clear.²⁹³ The empiricist stream of Enlightenment thought rejected the notion of a romantic author in favor of an externalist epistemology. This externalist account of knowledge and information informed American intellectual property policy far more deeply than the Cartesian, internalist account on which the romantic author depends. To the extent a philosophy of information underwrites American insider trading law, there is no historical reason to suspect that it relies on the internalist view of information.

²⁹⁰ *Id.*

²⁹¹ *Id.* at 498.

²⁹² *Id.* at 498-500.

²⁹³ *See* Section II.B., *supra*.

In fact, insider trading law is another area in which something other than either an externalist or internalist philosophy of information seems to be at work. The *Chiarella* Court focused on the *relational context* of the information rather than merely on the information itself. The way in which the information was socially constructed affected its value. Disclosure of information constructed in the context of a fiduciary relationship, even aside from any effect on the market, destroys something valuable created by a particular social context. The focus on fiduciary relationships is not a ruse to cover a false public / private information distinction rooted in social class and power. Rather, it is a recognition that some kinds of social relationships *create* valuable information. Fidelity to trust in a fiduciary relationship is a virtue that encourages the flourishing of the sorts of special relationships that tend to create this kind of information.²⁹⁴ Insider trading rules focused on fiduciary relationships, then, can be viewed as a way of supporting a virtue inherent to an information-constructive community.

C. SOCIAL RIVALRY AND ARMS' LENGTH CONTRACT NEGOTIATIONS

The highly nuanced way in which the law of contracts handles private information also reflects the socially constructed, rivalrous nature of information.

As a default posture, contract law privileges the holder of private information during the bargaining process. This is reflected in the general rule that parties to an arms-length business transaction are not required to disclose information to each other.²⁹⁵ The

²⁹⁴ For a discussion of the virtue of fidelity to trust in the context of biotechnology policy, see Opderbeck, *The Virtuous Penguin*, *supra* Note 193, at 336.

²⁹⁵ See, e.g., Williston on Contracts § 69:17 (stating that “The general rule is that a contracting party's silence does not amount to a failure to act in good faith, as will allow silence to constitute a

economic rationale for this seemingly harsh general rule is that a rule of full disclosure would destroy the practice of arms-length bargaining. If the rule were full disclosure, no one would have any incentive to discover useful information relating to a potential transaction aside from that which is facially obvious.²⁹⁶

The general rule, however, is notoriously slippery.²⁹⁷ The economic rationale for the rule's many exceptions, once again, hinges on search costs and the free rider problem. As Judge Posner puts it, "when the seller has without substantial investment on his part come upon material information which the buyer would find either impossible or very costly to discover himself, then the seller must disclose it—for example, must disclose that the house he is trying to sell is infested with termites."²⁹⁸

The search costs / free rider paradigm has been developed and nuanced by other law and economics scholars. Christopher Wonnell, after cataloging the many exceptions to the nondisclosure rule, argues that information is a commodity.²⁹⁹ An information disclosure requirement would introduce a free rider problem and thereby would deter

misrepresentation of material fact that will render contract voidable, absent an affirmative duty to disclose....); Nimmer, *Information Law* § 10:41 (stating that "As a general rule, no obligation exists in common law to disclose information relevant to another party in the course of negotiation or, even, in performance.").

²⁹⁶ See Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 *J. Legal Stud.* 1 (1978).; Richard A. Posner, *Economic Analysis of Law* 109-13 (4th ed. 1992); Christopher T. Wonnell, *THE STRUCTURE OF A GENERAL THEORY OF NONDISCLOSURE*, 41 *Case W. Res. L. Rev.* 329, 340-46 (1991). As Judge Posner explained in *F.D.I.C. v. W.R. Grace & Co.*, 877 F.2d 614, 619 (7th Cir. 1989)

A general duty of disclosure would turn every bargaining relationship into a fiduciary one. There would no longer be such a thing as arm's-length bargaining, and enterprise and commerce would be impeded. The seller who deals at arm's length is entitled to "take advantage" of the buyer at least to the extent of exploiting information and expertise that the seller expended substantial resources of time or money on obtaining—otherwise what incentive would there be to incur such costs?

²⁹⁷ See Wonnell, *supra* Note 296, at 332 (stating that, apart from a few clear exceptions, "the law of nondisclosure lapses into statements so vague that they can assume any meaning.")

²⁹⁸ *FDIC v. WR Grace*, *supra* Note 74, at 619.

²⁹⁹ *Id.*

production.³⁰⁰ Information also, according to Wonnell, facilitates the exchange of other commodities.³⁰¹ There are times, then, when the costs of any free rider problem are outweighed by the benefits of disclosure.³⁰²

Wonnell seeks to calibrate the considerations in circumstances where efficiency might be enhanced by “merging” information with a resource, a non-disclosure rule might encourage the internalization of the external benefits of entrepreneurial activities, a disclosure requirement might inhibit the signaling function of prices, and a disclosure rule would limit extortion.³⁰³ Wonnell concludes by offering as a general rule that “a party to a contract is under an obligation to disclose facts pertinent to the contractual exchange whenever the risk that nondisclosure will frustrate the process of mutually beneficial exchange outweighs the prospect that a disclosure duty would unduly jeopardize the security of promissory transactions.”³⁰⁴ Two pages of detailed qualifications and exceptions are appended to the proposed general rule.³⁰⁵

The increasingly circuitous effort to explain non-disclosure rules solely in efficiency terms, illustrated by Wonnell’s complex proposed rule, suggests that something else is afoot. Alan Strudler, for example, has considered non-disclosure rules as an expression of social norms about how “victims” of non-disclosure should be

³⁰⁰ *Id.*

³⁰¹ *Id.*

³⁰² *Id.*

³⁰³ *Id.* at 217-18.

³⁰⁴ *Id.* at 383.

³⁰⁵ *Id.* at 383-85.

treated.³⁰⁶ The “strained and implausible” efforts of law and economics scholars to justify the various permutations of and exceptions to non-disclosure rules, Strudler argues, demonstrate that such explanations are not truly descriptive of how and why such cases are decided.³⁰⁷ The complexity of these explanations and the lack of empirical basis for them belies the supposedly scientific nature of the analysis.³⁰⁸ Such a theory, Strudler suggest, must be rooted in expressivist deontological ethical principles.³⁰⁹

Kim Lane Scheppelle supplies one effort to root non-disclosure rules in the deontological, Rawlsian difference principle.³¹⁰ Scheppelle challenges the economic view of non-disclosure rules through an analysis of cases decided in New York between 1804 and 1900.³¹¹ Scheppelle argues that the early prevalence of the *caveat emptor* rule reflects the fact that, in most early cases, the seller was less likely to know the relevant facts than the buyer.³¹² The early cases reflect an economy in which merchant-sellers quickly disposed of raw materials – often agricultural products, such as cotton or timber – to sophisticated manufacturer-buyers.³¹³ Exceptions usually involved sellers of food and horses (and slaves in earlier cases) – commodities which were not components of

³⁰⁶ Alan Strudler, *Moral Complexity in the Law of Nondisclosure*, 45 UCLA L. Rev. 337 (1997). Strudler notes that “an economic account of nondisclosure fails, in part because it must neglect the expressive element in nondisclosure law, and because it therefore cannot coherently answer the question: ‘Why impose (civil) liability on people who engage in wrongful nondisclosure?’” *Id.* at 353.

³⁰⁷ *Id.* at 357-58.

³⁰⁸ *Id.* at 361-62 (stating “[i]t is ironic that legal economists, who aspire to place legal analysis on respectable scientific footing, must, in the end, rest their justification on pure speculation. But legal economists do not stand alone in appealing to pure speculation to reach conclusions they regard as scientific: their utilitarian intellectual ancestors often encountered the same fate.”).

³⁰⁹ *Id.* at 355.

³¹⁰ Scheppelle, *supra* Note 217.

³¹¹ *Id.* at 269-98.

³¹² *Id.* at 270-71.

³¹³ *Id.* at 276-280.

manufacture and for which seller presumably had superior knowledge – and cases of affirmative fraud.³¹⁴ Later cases, in which the rule of caveat emptor was less likely to be applied, reflected the move away from an agrarian economy to an economy in which sellers were manufacturers of complex products that could not easily be inspected by buyers.³¹⁵ The heuristic governing these cases, then, is the nature of the relationship between the parties, and in particular the relative ease with which each party can discover undisclosed information.³¹⁶ This means that such cases are not reducible to universal utilitarian principles of efficiency.³¹⁷

As with trade secrets, Sheppelle argues that a contractarian perspective provides a better foundation for decision-making in such cases than a utilitarian or consequentialist perspective.³¹⁸ Sheppelle argues that a version of Rawls’ “difference principle,” which would guarantee each person a minimum floor of equality, should be applied when a party has access to “deep” secrets – secrets that the other party cannot reasonably discover.³¹⁹ Under such circumstances, the modified difference principle dictates that the information be disclosed.

Strudler criticizes Scheppelle’s application of Rawls because it fails to account for the moral complexities of many non-disclosure cases.³²⁰ Rawls’ difference principle,

³¹⁴ *Id.* at 281-285.

³¹⁵ *Id.* at 285-92.

³¹⁶ *Id.* at 294 (stating that “[o]ne’s property right in a piece of information depends on the condition of the person against whom one is claiming the right.”).

³¹⁷ *Id.* at 297. As Scheppelle puts it, “[t]he question that confronts the judge is what to do *in that case* and not some other.” *Id.*

³¹⁸ *Id.* at 297-98.

³¹⁹ *Id.*; *sSee* Strudler, *supra* Note 306, at 376-68.

³²⁰ Strudler, *supra* Note 306, at 366-68.

Strudler argues, becomes absurd when applied to specific, micro-level cases such as individual disputes about contract disclosures.³²¹ Moreover, in many cases, the non-disclosure of even “shallow” secrets seems egregiously unfair.³²²

Studler instead suggests a “deserved advantage principle” of non-disclosure that merges economic and deontological insights.³²³ Under the deserved advantage principle, a person who acquires information that increases the value of the subject of a transaction is rewarded with a property right in that information because she *deserves* greater bargaining strength as a result of her efforts.³²⁴ A stronger bargaining position is a reward for the effort required to achieve the stronger position.³²⁵ Studler argues that the application of this principle will provide a principled distinction between cases in which a party obtains valuable information through diligent research and cases in which a party acquires such information solely through the other party’s mistake.³²⁶ It also offers a rationale for non-disclosure in some cases for which the incentive rationale is merely speculative.³²⁷

Studler uses *Zimpel v. Trawick* as an illustration of how his deserved advantage principle works compared to economic analysis or Scheppelle’s modified Rawlsian approach.³²⁸ The plaintiff in *Zimpel* was an elderly woman who sold mineral rights to the defendants. The defendants had learned of a “tight holed” test well near Zimpel’s

³²¹ *Id.* at 368-70.

³²² *Id.*

³²³ *Id.* at 370-71.

³²⁴ *Id.* at 375.

³²⁵ *Id.*

³²⁶ *Id.* at 377.

³²⁷ *Id.* at 378.

³²⁸ *Zimpel v. Trawick*, 679 F. Supp. 1502 (W.D. Ark. 1988); Studler, *supra* Note 306, at 379-84.

property, and surmised that oil had been discovered.³²⁹ The defendants learned from some personal contacts that the test well indeed suggested a large oil field was present.³³⁰ This information was not disclosed to Zimpel; in fact, defendant Trawick suggested to Zimpel's brother, John, that there was no oil activity in the area.³³¹ Zimpel sold her mineral rights for \$30,000, which was \$19,500 below fair market value based on the proximity of the test well.³³² The court awarded Zimpel compensatory and punitive damages for misrepresentation.³³³ The court made much of the fact that Zimpel was an elderly woman who required an oxygen bottle and breathing apparatus.³³⁴

Studler suggests that utilitarian approaches to cases like *Zimpel* present a dilemma.³³⁵ It seems wrong, from an efficiency perspective, to deprive the *Zimpel* Trawick of his bargaining advantage. Trawick did, after all, use legitimate industry knowledge and entrepreneurial initiative to acquire information about the “close” well. However, the unique circumstances of Zimpel's age and physical frailty suggest that Trawick was able to leverage his bargaining strength far beyond the level of their entrepreneurial investment.³³⁶ Studler suggests that this dilemma could have been avoided if Trawick had insisted on involving Zimpel's younger, healthier brother John in

³²⁹ *Id.* at 1504. A “tight holed” well means that “signs are posted around the well warning spectators to stay away, and the drilling entity releases no information in respect to the well.” *Id.*

³³⁰ *Id.*

³³¹ *Id.* at 1504-05.

³³² *Id.* at 1505, 1512.

³³³ *Id.* at 1512.

³³⁴ *See id.* at 1511.

³³⁵ Studler, *supra* Note 306, at 380.

³³⁶ *Id.*

the negotiations.³³⁷ Studler's deontological principle of deserved advantage would suggest that Trawick's conduct was sanctioned because he received more than he deserved.

Studler's ethical analysis is promising, but thin. On what basis can a court determine what a party "deserves"? It seems more productive to think about cases like *Zimpel* not primarily in terms of *individual* duty, but rather in *social* terms. In particular, cases like *Zimpel* seem to recognize the socially rivalrous nature of information. Information is not merely a commodity that makes a contractual exchange more or less efficient. Information also is the stuff through which a contractual relationship is *constructed* where none previously existed. Rules about non-disclosure, then, regulate the power relationships inherent in the formation of contractual communities.

Trade secrets and insider market information arise out of existing social networks. The semantic content of such information – the meaning that gives it value – depends on acts of social construction. Trawick's information about the close well, in contrast, was derived apart from any relationship with Mrs. Zimpel. The information held by Trawick was socially rivalrous because disclosure would have decreased Trawick's advantage in negotiations with Mrs. Zimpel. However, the value of the information did not arise from any existing relationship between Trawick and Zimpel. Like any non-disclosure case, this is not a situation where information that constitutes and has value in the context of an existing relationship is disclosed in a community-destroying fashion. Here, the question is what sort of information will form the basis of a prospective relationship.

³³⁷ *Id.* at 382.

A contract is a way of constructing a community. The teleology of most contractual communities is that each party would benefit in accordance with its contribution to the community. A community constructed on the basis of deception is unlikely to flourish because the deceiving party is likely to benefit out of proportion to its contribution. The core question, then, is not whether Trawick's concept was efficient or not in some broad sense, or whether Trawick "deserved" to profit from his efforts. Rather, the key question is whether Trawick's non-disclosure in this instance resulted in the construction of a defective contractual community. Stated another way, was Trawick's non-disclosure community-constructive, and if so, should the information he failed to disclose have been part of the commons?

Only if the question is asked this way do the disturbing facts in *Zempel* matter. Efficiency cares little about whether Mrs. Zempel was an elderly lady who was dependent on an oxygen bottle, in fear of her ill health and poor financial condition. And notwithstanding Studler's analysis, it is unclear why Trawick did not "deserve" to benefit from his efforts to find out about the test wells. The difference between the sale price and the market value of Zempel's land, after all, was only \$19,500 – arguably not an enormous windfall for Trawick's legwork and for the risk and expense of developing the property.³³⁸

The problem is that Trawick prevaricated in ways that were calculated to take advantage of Mrs. Zempel's frail health and to direct her attention away from making inquiries that would have allowed her to share in the value of the information about the

³³⁸ *Id.* at 1512.

close wells. The resulting community of contract that was constructed between Trawick and Zempel was therefore misdirected at the start. Rather than reflecting a teleology of mutual benefit, in which both parties take reasonably informed chances, the contract was designed to benefit Trawick alone through his exploitation of Trawick's ill-health. Trawick, then, ignored the "other-regarding" virtues that would have supported the construction of a community in which Trawick and Zempel could both have benefited and that are essential to the flourishing of a community of commerce and trade as a whole.³³⁹

IX. CRITICAL REALISM, NETWORK NEUTRALITY, AND VIRTUE

The first part of this paper demonstrated that intellectual property scholarship has been overly fixated on information as a non-rival economic resource. This fixation results from a historical and philosophical myopia that fails to account for the socially rivalrous dimensions of information. The previous part demonstrates that the socially rivalrous aspects of information are central to at least a few areas of the law, outside of "hard" intellectual property and cyberlaw, that involve information exchanges. How can these insights be applied to current intellectual property and information law debates? This section briefly suggests an application relating to the network neutrality debate.

The network neutrality debate illustrates why the dominant intellectual property paradigms are insufficient. The strengths and weakness of a New Chicago School economic approach, for example, are highlighted in Brett Frishman's recent work with

³³⁹ For a discussion of "other regarding" virtues, see Opderbeck, *supra* Note 193, at 329.

Mark Lemley on spillovers.³⁴⁰ Frischmann and Lemley argue that a central tenet of Demsetzian property theory – spillovers are bad – does not always apply to intellectual property.³⁴¹ This is because innovations are non-rival public goods and any externalities relating to innovations are therefore “driven by the creation of the legal entitlement itself”; because “buyers” of intellectual property use innovations as inputs into further innovation; and because intellectual property rules do not set crisp property boundaries and therefore imply significant enforcement costs.³⁴²

Because of these unique features of innovation, Frischmann and Lemley argue, an intellectual property regime need not necessarily focus on the full internalization of spillovers in order to promote maximal social welfare. An incremental incentive to innovate may not produce a corresponding increase in innovation because of the non-monotonic nature of innovation and the costs of controlling intellectual property rights.³⁴³ Moreover, some innovation resources that can be characterized as “infrastructure” are best managed as common resources because of the positive externalities they generate.³⁴⁴

So far, Frischmann and Lemley’s approach seems congenial to information law scholars who raise broader distributional concerns about information. It turns out, Frischmann and Lemley suggest, that classical law and economics is often mistaken about the propertization of innovation. On efficiency grounds alone, it seems that innovation sometimes need not be propertized.

³⁴⁰ Brett M. Frischmann and Mark A. Lemley, *Spillovers*, 107 Colum. L. Rev. 257 (2007).

³⁴¹ *Id.* at 265-70.

³⁴² *Id.* at 273-75.

³⁴³ *Id.* at 279.

³⁴⁴ *Id.* at 288-82.

The weakness of Frischmann and Lemley’s approach becomes apparent, however, when they apply it to the specific instance of the network neutrality debate.³⁴⁵ They suggest that an open infrastructure Internet model produces beneficial spillovers in the form of “widespread end-user participation in a variety of socially valuable productive activities.”³⁴⁶ A network discrimination model, in contrast, preferences end-uses that “generate observable and appropriable benefits” over end uses that “generate spillovers.”³⁴⁷ Further, they suggest, a network discrimination model likely will reduce applications-level innovation, because the value of that innovation will accrue to the owners of the network.³⁴⁸ Therefore, they conclude, “[p]reserving Internet spillovers requires preserving network neutrality.”³⁴⁹

While critical scholars might appreciate this conclusion, we should be less sanguine about the means used to reach it. A glaring problem is that the argument raises a host of unexplored and unresolved empirical questions. What empirical basis is there for the claim that network discrimination would result in fewer positive externalities than an open system? A pay-per-bandwidth system might make users more careful and systematic in their use of the network, and might thereby produce innovations that have greater spillover benefits than a bandwidth-neutral network.³⁵⁰ As Christopher Yoo has

³⁴⁵ *Id.* at 294-98.

³⁴⁶ *Id.* at 297.

³⁴⁷ *Id.* at 298.

³⁴⁸ *Id.* at 298.

³⁴⁹ *Id.*

³⁵⁰ *See, e.g.,* Christopher S. Yoo, *Beyond Network Neutrality*, 19 Harv. J. Law & Tech. 1, 22-25 (noting circumstances under which network neutrality could limit innovation driven by end-user demand”).

noted, from a welfare perspective, “the desirability of complete standardization and interoperability is an empirical question that cannot be answered a priori.”³⁵¹

Linked to this empirical problem is the question of “pollution” of the commons.³⁵² As Gian Maria Greco and Luciano Floridi have observed, “improving the Infosphere by bridging the digital divide, without paying due attention to the necessary responsibility of the users, is likely to bring about an increase in bandwidth saturation and information pollution.”³⁵³ In a welfare analysis, the negative externality of “bandwidth pollution” might outweigh any of the speculative spillover benefits posited by Frischmann and Lemley.³⁵⁴

The “romantic author” critique likewise offers no surcease from the network neutrality dilemma. This is because the network neutrality debate concerns control over bandwidth, not control over an identifiable “work” or “invention.” Network “diversity” has nothing to do with rewarding a putative author or inventor for his or her creativity. The debate cannot be deconstructed on this basis and cannot be analyzed as a simple political struggle between individuals claiming “authorship” and the public.

³⁵¹ *Id.* at 25. Yoo suggests the following empirical considerations:

The level of aggregate demand, heterogeneity of network uses, the variability in network traffic flows, end users’ need for network reliability, and the extent to which technological change is reorganizing the natural boundaries between levels that were previously separated by a natural interface. . . .

Id.

³⁵² See, e.g., Gian Maria Greco and Luciano Floridi, *The Tragedy of the Digital Commons*, 6 *Ethics and Information Technology* 73 (2004).

³⁵³ *Id.* at 76.

³⁵⁴ Absent empirical data, Frischmann’s argument seems more like an application of the precautionary principle to the intellectual property commons.

Of course, the fact that an economic approach raises empirical questions is not unusual, and there likely are other ways to deconstruct the network neutrality debate such that its political bones are laid bare. But it is unlikely that any empirical studies will conclusively answer all the questions raised by the network neutrality debate, and a forensic account of the politics begs the question whether there is a “right” political choice. No approach that elides the community-constructive role of information can offer a fully satisfying account of the problem, because no such approach recognizes the full scope of the problem.

Information is not merely an input, a commodity, and/or a code word for a power play. It can be all of those things, but at some level, information also is the skeleton of all human communities. We create information that creates communities. But the information and communities we create are not arbitrary; they are bounded by and reflective of a reality that is deeper than our human limitations. The extent to which people are able to access information-based communities is not, then, *merely* an exercise in political will. It is also, as Jefferson recognized for somewhat different reasons, a question of access to the external reality that molds and shapes us, an in which we might flounder or flourish. In this sense, the New Chicago School is correct to view information as a sort of “architecture” that regulates behavior. However, the New Chicago School’s tendency to view information through Shannon-lenses as something ontologically “other” than the human social relationships in which it is embodied deprives legal theory of a richer source of ethical reflection. We are left only with a kind of welfare consequentialism.

When we consider how access to information should be regulated, then, we must first consider whether the information in question is basic to a particular community. If the information is basic to community construction, we must then ask about the purposes and goals of the particular community in relation to the human community as a whole. Only then can we discern whether practices of exclusion or inclusion relating to the information – and thereby to the community – foster the sorts of virtues that are integral to human flourishing. In other words, we must reach past the postmodern critique, the pragmatist malaise, and the failed Enlightenment project, towards a deeper notion of human flourishing and virtue.³⁵⁵

This requires us to rethink the ethical basis for intellectual property and information policy. A full treatment of that subject is beyond the scope of this paper, but following are some preliminary thoughts on how a virtue ethics perspective that accounts for the community-constructive aspects of “information” might apply to the network neutrality debate.

Code is socially rivalrous. If I possess code that controls access to bandwidth, I control the sort of community users of the communication channel may form. I might ration bandwidth based on a graduated payment schedule and let user demand determine the shape of the community according to the model of neoclassical economics. That choice reflects a particular presupposition about the teleology of this community: that a market-determined community is best. That might be an acceptable outcome. Or, we might ask whether, in this instance, a market-based solution is most consistent with the

³⁵⁵ Cf. Opderbeck, *The Virtuous Penguin*, *supra* Note 193.

community that has arisen in and through the Internet and with the directions for that community that would best promote human flourishing.

Here may lie a paradox: if we value the open, egalitarian, democratic culture of the Internet – if openness, egalitarianism, and democracy are *virtues* we want to encourage -- perhaps the kind of “code” or “information” that constitutes this type of community must be at least partially removed from the free market. To return to the analogy of the poker game, perhaps a basic level of bandwidth must constitute the flop cards, to which every player has open access. The players may still have some hole cards, which are held close to the vest, in order to encourage other virtues, such as industriousness, self-determination and entrepreneurial risk-taking. But the kind of game we want to play requires that some cards be laid on the table.

While this offers no immediate solution to the network neutrality debate, it perhaps opens new avenues for discussion. We should lay aside our pretensions about the “scientific” approach to information regulation, which is rooted in Enlightenment notions of disembodied “information” that have long been discredited. But we should also move beyond the reductionistic trap of mere constructivism. The language and concepts of the ancient virtues, wedded to a critical realism, provide fertile ground for fresh thinking about these intractable debates.

VII. CONCLUSION

Contemporary legal theory concerning access to information is a curious jumble. In the “hard” intellectual property disciplines, and in relation to networked communications and the Internet, legal theory marries a Jeffersonian Enlightenment view

of “Nature” with postmodern notions of the social construction of “authorship” through Shannon information theory. The result is that legal theory consistently observes the dogma that information is fundamentally non-rival economic commodity, even while it seeks to expose the power relationships that underlie debates about access to information. The fruit of this strange marriage of foundationalist epistemology, anti-realist ontology, and questionable historiography is a set of intractable arguments that inevitably devolve into unanswerable empirical questions and a groundless pragmatism.

In “softer” areas of the law that concern access to information, however, the circumstances are different. In contexts such as trade secret, insider trading, and pre-contract disclosure cases, it seems that information operates as far more than some sort of abstract, non-rival commodity. Information, in these contexts, is part of the stuff through which certain types of relationships and communities are constructed. Because information helps construct communities, those who possess information possess a form of power. Sharing information diminishes the power held by the person who previously restricted access to the information. Information therefore is socially rivalrous.

The sort of social construction inherent in these contexts, however, is not primarily concerned with the “romantic author.” Rather, in these contexts, the relative amounts of information possessed by the different actors, the nature of the information they share or do not share, and the fiduciary (or not) nature of their relationships, form a variable layer that lies on top of the given world the participants inhabit. This suggests a critical realist approach to information policy. In the language of critical realism, the particular communities that are constructed with information are a transitive social

dimension, which does not elide a deeper intransitive dimension of reality that the participants in such communities must take as a given.

This critical realist perspective suggests that mere pragmatism – whether stemming from the Enlightenment or post-structuralist roots of contemporary information policy – is not enough. Information is not merely a non-rival tool or commodity. It is neither the flame on Jefferson’s candle nor the pulses of light in William Gibson’s cyberspace. Rather, information is a fundamental social structure in the various communities that comprise the human experience. A robust information policy, then, must consider the ways in which granting or restricting access to information will encourage the extension of communities that promote human flourishing. Viewed this way, questions about access to information are not only questions about utility. Also, and more deeply, they are questions about the practices and virtues that promote human flourishing.