THE PATENT MEDIUM: TOWARD A NETWORK PARADIGM OF THE PATENT SYSTEM

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ABSTRACT

The modern patent system is conceived of as an information platform; it is evident in the common description of the patent system as a quid-pro-quo bargain: Society grants exclusive rights in exchange for information published by a patentee. But is there more to the patent system than merely informing others? Does the patent system also serve as a communication (and not only information) platform, namely, as a medium? Based on an interdisciplinary analysis of the patent system's structure and features through the lenses of communication studies, this Article suggests that it does. I demonstrate how the patent system—as a medium—enables players to fulfill various communicative ends, much beyond the obvious goal of disseminating legal-technological knowledge. The Article strives to characterize the patent medium, as well as to examine the implications of portraying the patent space as a medium.

Utilizing the power of communication analysis, the Article uncovers an existing, somewhat implicit communication paradigm of the patent system as a medium. Although tacit and unofficial, this paradigm is evident through a critical reading of patent scholarship and case law. This unspoken communication paradigm resembles that of a *bulletin board*: it is linear, straightforward, and focuses on the informative value of communication. However, this bulletin-board paradigm does not reflect in full the actual nature of the communication that transpires within the patent medium. After reexamining the patent space—the rules, structure, participants, and practices within the patent system—the Article offers an alternative, more comprehensive paradigm of the patent medium—the *network paradigm*. A network, as opposed to a bulletin board, is a connected, multi-directional, and multi-player platform, which allows communication for various ends (including, but not limited to, informing). Instead of a static view of the patent medium as a whereabouts of informative announcements, the network paradigm suggests a dynamic perspective, considering the patent medium to be enabling a *discourse*.

Beyond its theoretical contribution, the network paradigm serves as a powerful explanatory tool, offering profound implications for patent law. Specifically, the network paradigm resolves current oddities in the patent system; for instance, the network paradigm provides new understandings regarding phenomena in patent law such as patent pledging, early publication, and the first-to-file rule—incidents commonly considered enigmatic or only partially understood. As a tool with theoretical and practical-analytical value, the network paradigm benefits both courts and commentators in theorizing and rationalizing patent law.

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I. INTRODUCTION

Disseminating information is a fundamental function of the patent system.[1] Indeed, rules related to the process of disseminating information comprise a linchpin in patent law, such as the disclosure requirement and patent claims.[2] Hence, it is not surprising to see extensive literature and case law on patents' informational role.[3]

However, the patent system serves beyond merely disseminating information. For instance, patents can stimulate consumer interest and unveil future products;[4] the patent system can mediate novel scientific achievements to the public[5] and signal commercial or national dominance;[6] patents may inform the public about anticipated changes in our daily experience[7] or contribute to crisis-related discourses like the climate change.[8] The patent system assumes more than an informational role; it plays a *communicative* role.

Although somewhat reminiscent of each other, the informational role and communicative role are not that same.[9] The informational role mainly refers to the patent system's power to convey technical knowledge and notify others about legal restrictions due to a patent issuance. The communicative role refers to the use of the patent system to interact with other players in various ways, including stimulating, misleading, criticizing, and endorsing others. Communicating can be highly active, emphasizing not only the knowledge that parties transmit or acquire, but rather the interactions between parties and the consequences of such engagements.

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[1] *J.E.M. Ag Supply, v. Pioneer Hi-Bred* 534 U.S. 124, 142 (2001); Jeanne Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 541-44 (2009); Jason Rantanen, *Patent Law's Disclosure Requirement*, 45 LOY. U. CHI. L.J. 369, 370-71 (2013).

[2] 35 U.S.C. §112; Or Cohen-Sasson, *A Hidden Technological Assumption in Patent Law*, 22 JWIP 272 (2019).

[3] Dan Burk, *Patent Silences*, 69 VAND. L. REV. 1603, 1606-07 (2016); Fromer, *Patent Disclosure*, supra note 1; Rantanen, *Patent Law's Disclosure*, supra note 1, at 378-88; Sean Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621 (2009).

[4] Henry Leger, *This Leaked PlayStation 5 Patent*, TECHRADAR (2019), https://www.techradar.com/news/this-leaked-ps5-patent-gives-us-our-best-look-at-the-console-design-yet.

[5] Stephen Shankland, *Apple Built UWB into the iPhone* 11, CNET (2019), https://www.cnet.com/news/apple-built-uwb-into-the-iphone-11-heres-what-you-need-to-know-faq/.

[6] Ariel Cohen, *A Breakthrough in American Energy Dominance?*, FORBES (2019), https://www.forbes.com/sites/arielcohen/2019/10/30/a-breakthrough-in-american-energy-dominance-us-navy-patents-compact-fusion-reactor/#748843421070.

[7] Saavon Smalls, *Recently-published Patent Suggests Facebook Wants to Include Ads in DMs*, MASHABLE (2019), https://mashable.com/video/facebook-dm-private-ads-patent/.

[8] Stephen Kuper, *Player Two Has Entered the Game*, DEFENCE CONNECT (2019), https://www.defenceconnect.com.au/key-enablers/5064-player-two-has-entered-the-game-us-navy-files-fusion-reactor-patent.

[9] HUNTER WHITNEY, DATA INSIGHTS 191 (2012).

In contrast to the vast extant literature about patents' informational role, their communicative role has been studied only marginally,[10] lacking a clear theory regarding *patent communication*, i.e., the bundle of various interactions (e.g., patentee-public or applicant-PTO interactions) within the *patent space*. The term 'patent space' refers to the collection of components comprising the patent system, such as its rules, players, common practices, and related phenomena.

This Article strives to fill in this gap with two major steps. *First*, this Article exposes an existing, unspoken communication paradigm of the patent system—the *bulletin-board paradigm*. Although the patent system has no official communication paradigm, a close inspection reveals an implicit one. I conceptualize this communication paradigm as a bulletin board, as it perceives patents as announcements, disregarding the notion of the patent space as an arena of conversation. *Second*, the Article offers an alternative communication paradigm—the *network paradigm*. A network suggests a more diverse and nuanced picture, portraying the patent space as a discourse, not a one-way trajectory.[11]

Importantly, the relation between the bulletin-board and the network paradigms is not one of contradiction, but of containment: The network paradigm adopts the bulletin-board paradigm's insights, such as the informing function, and offers a more comprehensive communication model that better explains patent communication.

The Article integrates the fundamentals of patent law and communication studies, thereby offering a systematic, organized paradigm of the *patent medium*. The patent medium is a hypothetical apparatus consisting of all communication that transpires in the patent space. Addressing the patent system as a medium—not solely as an economic-legal instrument—reveals a new stratum of the patent system: its communicative function. The communication studies analysis points to an intriguing dissimilarity: The bulletin-board paradigm resembles more basic, linear models of communication.[12] In contrast, the network paradigm is closer to the transactional model,[13] a later, popular communication model that attained popularity due to its ability to fit complex communications.

Equipped with a new, fine-tuned communication paradigm of the patent system—namely, the network paradigm—the Article advances an explanatory argument arising from this paradigm: The network paradigm enables us to better understand and explain

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[10] With few exceptions discussed later: Jonas Anderson, *Nontechnical Disclosure*, 69 VAND. L. REV. 1573 (2016); Clark Asay, *The Informational Value of Patents*, 31 BERKELEY TECH. L.J. 259 (2016); Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625 (2002).

[11] Jay Blumler, Elihu Katz & Michael Gurevitch, *Utilization of Mass Communication by the Individual*, *in* THE USES OF MASS COMMUNICATIONS 19 (1974); ELIHU KATZ & PAUL LAZARSFELD, PERSONAL INFLUENCE, 32-33 (1955); DAN LAUGHY, KEY THEMES IN MEDIA THEORY, 23-25 (2007).

[12] CLAUDE SHANNON & WARREN WEAVER, THE MATHEMATICAL THEORY OF COMMUNICATION (1949).

[13] Dean Barnlund, *A Transactional Model of Communication*, in FOUNDATIONS OF COMMUNICATION THEORY 83 (1970).

various practices and rules in patent law. The following discussion elaborates on this argument.

Consider the phenomenon of early publication. Patent law requires publication of a patent application no later than 18 months from the earliest filing date.[14] The traditional view of patent law maintains that publication is against the patentee's interest, who prefers secrecy.[15] In fact, this is the principal issue patent law aspires to overcome—incentivizing publication with economic rights.[16] As such, according to the bulletin-board paradigm, applicants are expected to defer publication as much as possible, at least until the issuance of a patent. However, practice reveals an intriguing phenomenon: nearly half of applicants demand that the Patent Office (PTO) publish their application earlier.[17] Moreover, more than 20% of applicants who are eligible to opt out of the 18-month deadline choose not to do so.[18] These practices pose difficulties to the bulletin-board paradigm.

On the other hand, the network paradigm offers a proper explanation of early publication: Disseminating information is neither the patent system's sole function nor its sole capability. Players, including applicants, use the patent system for other ends, such as to expand collaborations,[19] generate a buzz,[20] and encourage consumerism.[21] The patent system serves not only as a legal platform but also as a communication network for conducting a discourse. The early publication practice, which conflicts with the underlying assumptions of the bulletin-board paradigm, coincides with the network paradigm: Publication—and more generally, patent communication—is not (only) a means but an end.

Part II provides an introduction of patents as artifacts of information and communication. Part III presents the theoretical foundations from communication studies that the arguments in this Article take root in. Part IV exposes the communication paradigm that currently implicitly governs the patent literature and case law: the bulletin-board paradigm. Then, I demonstrate why it is deficient. Part V proposes a new, alternative communication paradigm of the patent medium—the network paradigm. The network paradigm is more than a mere theoretical view; it bears forceful explanatory power and thus has practical implications as well. I demonstrate the superiority of the

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[14] 35 U.S.C. §122(b).

[15] *Continental Paper Bag v. Eastern Paper Bag*, 210 U.S. 405, 424 (1908); Timothy Holbrook, *Possession in Patent Law*, 59 SMU L. REV. 123, 126-27 (2006).

[16] *United States v. Dubilier Condenser*, 289 U.S. 178, 186-87 (1933); Mark Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1276 (1995).

[17] 37 C.F.R. §1.219; Stephen Glaeser & Wayne Landsman, *Deterrent Disclosure*, 96 ACCT. REV. 291 (2021).

[18] 37 C.F.R. 1.213; Glaeser & Landsman, *Deterrent Disclosure*, id.

[19] Jorge Contreras, *Patent Pledges*, 47 ARIZ. ST. L.J 543, 573-74 (2015).

[20] Stuart Graham & Ted Sichelman, *Why Do Start-Ups Patent*, 23 BERKELEY TECH. L.J. 1063 (2008).

[21] Supra notes 4-7.

network paradigm over the bulletin-board paradigm, thereby further bolstering the suggestion to adopt the network paradigm. Finally, Part VI concludes.

II. PATENTS, INFORMATION, AND COMMUNICATION

Patent law is described as a social contract: A patent encompasses a pact between the public and the patentee,[22] in which the public bestows the patentee exclusive, fixed-term rights, and in exchange, the patentee discloses novel information.[23] Therefore, extensive literature addressed patents as a source of information.[24] The disclosure requirement is a focal motif in such literature, as it demands that a patentee describes the invention and its utilization. This information becomes public; thus, the disclosure is the primary instrument for disseminating information regarding a patented invention.

The disclosure requirement underscores the *informational* function of the patent system in two domains—the scientific-technical and the legal.[25] The scientific-technical information relates to a fundamental goal of the patent system—disseminating new technological information.[26] As utility-oriented documents,[27] patents serve as a useful resource both for scientists and down-stream inventors.[28] Patents are important source as they sometimes contain information not yet published.[29] Also, patent documents present technical topics in a broad manner, often more than other sources,[30] hence they bridge gaps between disciplines.[31] The second domain is that of legal information. The usage of patent documents for legal purposes is straightforward: Patent documents describe the scope of a patented invention to inform the public which actions are excluded and which are available for practice.[32]

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[22] *Grant v. Raymond,* 6 Pet. 218, 247 (1832); Oren Bracha, *Geniuses and Owners*, *in* TRANSFORMATIONS IN AMERICAN LEGAL HISTORY 369, 380 (2009).

[23] 35 U.S.C. §102(a).

[24] Annamaria Conti et al., *Show Me the Right Stuff: Signals for High-Tech Startups*, 22 J. ECON. MANAGE. STRATEGY 341 (2013); Lisa Ouellette, *Who Reads Patents?*, 35 NATURE 421 (2017).

[25] Timothy Holbrook, *Patents, Presumptions, and Public Notice*, 86 IND. L.J. 779 (2011).

[26] Edmund Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 287-88 (1977); Brenda Simon, *Patent Cover-Up*, 47 HOUS. L. REV. 1299, 1317 (2011).

[27] U.S. Const. art. I, cl. 8, §8; 35 U.S.C. §101.

[28] Ouellette, *Who Reads Patents*, supra note 24; Lisa Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545 (2012).

[29] RICHARD WALKER, PATENTS AS SCIENTIFIC AND TECHNICAL LITERATURE, 41 (1995); H. Mathys, *Patents as a Source of Information*, 4 ASLIB PROCEEDINGS 69, 73 (1952).

[30] Ouellette, *Do Patents Disclose*, supra note 28; James Terragno, *Patents as Technical Literature*, 22 IEEE TRANS. PROF. COMM. 101, 101-02 (1979).

[31] John Gilmore et al., *The Channels of Technology Acquisition in Commercial Firms and the NASA Dissemination Program*, (1967), https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19670022148.pdf.

[32] *Magsil v. Hitachi Global Storage Techs*., 687 F.3d 1377, 1380-81 (2012).

However, patents can do more than inform; the patent system has *communicative* aspects as well. Only sparse literature has addressed the communicative aspects of patents. Indeed, informing is a subset of communicating; however, communicating is a much broader, potent activity. Merely informing another is basic, low-level communication. When informing, one simply disseminates data in a standardized manner, while in communicating, the emphasis is on active participation in the design, delivery, or interpretation of a message. Put differently, communication means to converse, not only to inform.

Few legal scholars have examined issues regarding patent communication. A seminal work on patent communication is Clarisa Long's article, *Patent Signals*.[33] Long argues that patents serve patentees as relatively cheap, credible signals. She focuses on patents' potential to convey messages of economic significance, thus, she mainly considers economic audiences, such as competitors and investors.

The usage of patents as economic signals is fascinating, as patent documents do not contain detailed financial prospects (e.g., a revenue forecast). Moreover, patents do not promise the commercialization of an invention. In fact, most patented inventions are not commercialized.[34] And indeed, patent signals improve the chances of securing investments,[35] for instance, from venture capitals (VCs)[36] or in initial public offerings (IPOs).[37]

Two other works join the thread of patent communication: *The Informational Value of Patents* by Clark Asay[38] and *Nontechnical Disclosure* by Jonas Anderson.[39] Both articles apply Long's signaling theory to concrete cases in patent law. Asay addressed the communicative function in the context of patent pledges. In short, 'pledging' means waving patent rights fully or partially. Pledgers, by waiving patent rights, deliver various messages about themselves to competitors, investors, and potential partners.

Anderson focuses on the disclosure requirement. He contends that the patent disclosure is a way to communicate with investors, while 'investors' also include consumers, not only shareholders. Anderson's article adds a legal perspective to the

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[33] Long, *Patent Signals*, supra note 10.

[34] Kurt Saunders, *Patent Nonuse and the Role of Public Interest as a Deterrent to Technology Suppression,* 15 HARV. J.L. & TECH. 389, 391 (2002); Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341, 362-64 (2010).

[35] Mark Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137 (2000); Long, *Patent Signals*, supra note 10.

[36] Daniel Hoenig & Joachim Henkel, *Quality Signals*, 44 RES. POL'Y 1049 (2015); Annamaria Conti et al., *Patents as Signals for Startup Financing*, 61 J. INDUSTRIAL ECON. 592 (2013).

[37] Graham & Sichelman, *Why Do Start-Ups*, supra note 20.

[38] Asay, *The Informational Value*, supra note 10; Clark Asay, *The Informational Effects of Patent Pledges*, *in* PATENT PLEDGES 227 (2017).

[39] Anderson, *Nontechnical Disclosure*, supra note 10.

economic literature of patent signaling, as he analyzes this nontechnical disclosure through the lens of patent theory.

Works discussed thus far resemble the general notion that underlies this Article. However, there are various gaps in the literature, which this Article aims to resolve. First, extant works have not addressed the communication framework of the patent system per se. Scholars focused on the capability to convey messages through patents in particular contexts. None thoroughly delineated the theoretical foundations, structure, or overall framework of patent communication. Establishing such a framework is one of this Article's goals.

Second, current literature did not harness the power that lies within communication studies. To properly comprehend how the patent medium operates, one must utilize an interdisciplinary approach and apply communication studies. No literature to date has applied the prism of communication studies to investigate patent communication. This Article offers a thorough consideration of patent communication that rests on theoretical foundations of both relevant fields—patent law and communication studies.

Third, unlike previous studies, this Article focuses on the importance of intermediation. Intermediaries comprise an essential element in most communication systems,[40] and patent communication is no exception. Various intermediaries operate in the patent medium, including patent agents, PTOs, journalists, innovation analysts, salespeople, government agencies, and political entities.

Finally, most of the scholarship views patents as conveying one-way messages, under the senders' control, while underestimating the power of recipients. I argue that patents generate a unique conversation between parties, beyond informative announcements through the disclosure. Patentees are dominant players, but they are not the only players; others influence the message, including recipients.[41]

This Article strives to fill in these gaps and formulate a solidly founded communication paradigm of the patent medium. Such a paradigm will enable stakeholders to better understand and explain the patent system.

III. THE EVOLUTION OF COMMUNICATION MODELS: FROM LINEAR TO TRANSACTIONAL MODELS

This Part introduces the most common communication models: the linear model, the interactional model, and the transactional model. I portray the gradual progress from the basic, linear model to a much more comprehensive one—the transactional model.

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[40] KATZ & LAZARSFELD, PERSONAL INFLUENCE, supra note 11.

[41] Blumler, Katz & Gurevitch, *Utilization of Mass*, supra note 11.

Communication comprises the transmission of messages between parties.[42] The major players who participate in communication processes are the sender, recipients, and intermediaries.[43] The sender is the one initiates the message, and the recipient is the message's destination. The term 'recipient' implies passivity, and indeed early communication models underestimated the power of recipients in communication processes. In practice, as the one who decodes the message, the recipient holds significant power, no less important than that of the sender.

The intermediary serves as a bridge from the sender to recipients. At times, multiple intermediaries are involved, especially in our global and digital culture.[44] The intermediation process is of particular significance in communication theory, as intermediaries execute essential communicative actions, such as regulating, editing, or republishing.[45]

In 1948, Shannon, a mathematician and engineer, introduced a well-structured communication model comprised of several components: information source, transmitter, channel, receiver, and destination.[46] When these elements are placed in sequence, communication transpires. A source sends a message, encoded in the form of a signal, transmitted over a communication channel to a receiver, who decodes the signal back into a message that eventually arrives at a destination. Shannon and Weaver published a book that made Shannon's model more accessible to non-mathematicians, which drew considerable attention from communication theorists.[47]

The Shannon-Weaver model is *linear*. It conceives of communication as a one-way process, in which the sender is the sole dominant, active player.[48] Later studies pointed that the linear model did not capture all fundamental features of a communication process. For instance, intermediation is not part of this model. Elements in this model that somewhat resemble intermediation are very meager and technical, addressing only the electrical-computational aspect of intermediation. Another limitation of the Shannon-Weaver model is the distinction between communication sessions. Each session transpires independently, as if a session has a fixed time window, occurring independently, absent any context. There are two more problematic assumptions in the Shannon-Weaver model: Recipients are assumed to be passive players; and communication is limited to one message per one recipient.

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[42] DENIS MCQUAIL, MCQUAIL'S MASS COMMUNICATION THEORY, 14-35 (2010).

[43] Ruth Wodak & Michael Meyer, *Critical Discourse Analysis*, *in* 3 METHODS OF CRITICAL DISCOURSE STUDIES 1, at 8-12 (2015).

[44] JAN HARRIS & PAUL TAYLOR, DIGITAL MATTERS 175-92 (2005).

[45] KATZ & LAZARSFELD, PERSONAL INFLUENCE, id, at 1, 32-33; LAUGHY, KEY THEMES, supra note 11, at 23-25.

[46] Claude Shannon, *The Mathematical Theory of Communication*, 27 BELL SYSTEM TECH. J. 623 (1948).

[47] SHANNON & WEAVER, THE MATHEMATICAL THEORY, supra note 12.

[48] RICHARD ELLIS & ANN MCCLINTOCK, IF YOU TAKE MY MEANING (1994).

Communication theorists proceeded to develop more fine-tuned models. Schramm was the first to move in this direction, offering the *interactional model* in 1954,[49] which contributed the principle of the feedback layer. Schramm's model portrayed communication as a two-way or a circular interaction. Feedback covers important events transpiring in communication, such as gauging reception, understanding, and reacting. The interactional model introduced two more essential elements: (a) the communication context—the setting in which communication takes place—as a factor affecting the message; and (b) the field of experience, referring to the background and culture of the communicators, which influences the encoding and decoding of messages. However, the interactional model failed to provide a full account of communication. For instance, the interactional model did not cover the idea of parallel communications nor intermediaries.

In 1970, Barnlund proposed an improved model—the *transactional model*.[50] His most significant innovation was simultaneity. As its name implies, this model likens communication to a transaction: Communication is an interactive, simultaneous game in which participants play together because their interests overlap. While the interactional model described communication as a turn-based process, the transactional model described multiple, parallel lines of exchanging messages simultaneously. The transactional model highlights the role of recipients and intermediaries. Recipients are described as substantial, active players, underscoring that the communication process is not a sender-centric game.[51] Similarly, the model recognize the influence of intermediaries within communication.

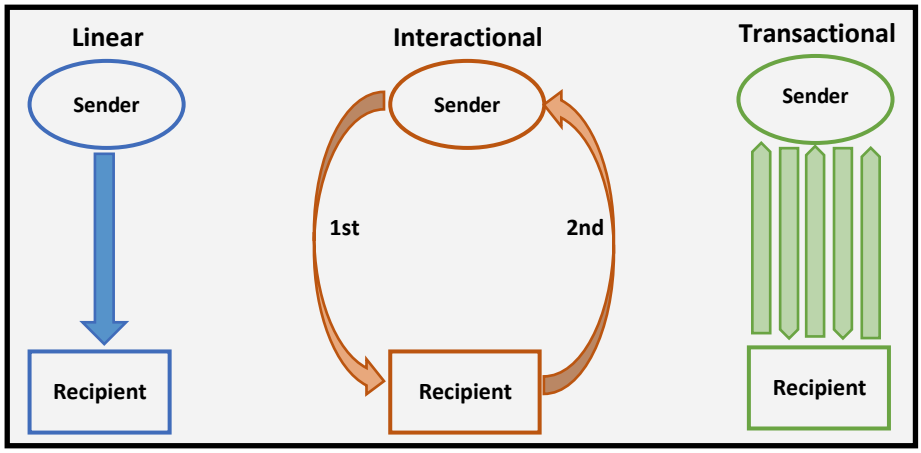

Fig. 1: Three Classical Communication Models

[49] Wilbur Schramm, *How Communication Works, in* THE PROCESS AND EFFECTS OF MASS COMMUNICATION 3 (1970).

[50] Dean Barnlund, *A Transactional Model of Communication*, in FOUNDATIONS OF COMMUNICATION THEORY 83 (1970).

[51] UMBERTO ECO, ROLE OF THE READER (1979); Charles Fillmore, *Ideal Readers and Real Readers*, *in* ANALYZING DISCOURSE TEXT AND TALK 248 (1982).

In distinguishing between the linear and transactional models, it is important to note that linear models conceive of communication as a one-way channel, whereas transactional models describe communication as a conversation. Thus, players' communicative roles in the transactional model are not static: Senders become recipients, and vice versa; intermediaries also shift positions, from recipients to interpreters. This dynamic process seems to characterize a conversation rather than a one-way dissemination.

Compared with the linear and interactional models, the transactional model is more sophisticated and stratified. Indeed, the transactional model is the most comprehensive and fine-tuned communication model. It includes all major components of previous models and introduces important new ingredients.

The gradual progress from a linear model to a transactional one was necessary to fully comprehend communication processes. A static paradigm, as the linear model, does not reflect the real nature of communication; to accomplish profound comprehension, communication theorists had to capture the dynamic nature in their models. Later in this Article, I argue that a similar move must take place in the context of the patent medium. Namely, to fully understand patent communication—and generally, the patent system—we should advance from a static, linear paradigm to a dynamic, transactional one.

IV. THE CURRENT MINDSET OF PATENT COMMUNICATION: THE BULLETIN-BOARD PARADIGM AND ITS DEFICIENCIES

Section A reveals a tacit communication mindset that currently resides in the patent scholarship and case law, which I entitle the *bulletin-board paradigm*. Section B shows that this paradigm does not provide a full comprehension of patent communication. I use three phenomena to demonstrate its failure: patent pledges, early publication, and the first-to-file rule.

A. THE PATENT MEDIUM AS A BULLETIN BOARD

This Section presents the paradigm governing the current mindset concerning patent communication. I call this undeclared (yet present) mindset the bulletin-board paradigm, as the communication process it suggests resembles the act of posting informative notes on a public message board. In many respects, this paradigm corresponds to the linear model of communication. Whereas this paradigm provides some insights regarding patent communication, I argue that it falls short of presenting the complete picture.

Below are the five elements comprising the bulletin-board paradigm, as evident in the academic literature and case law.

1. Informing

The first element is the focus on informing rather than communicating. When commentators discuss patent communication, they focus on a patent's content, particularly the information disclosed about the invention.[52] The communicative value of patents boils down to the informational aspect, with a strong, almost exclusive emphasis on the disclosure requirement.[53] Another example that highlights the informing orientation is the focus on prior art as an informative component.[54] Prior art constitutes all information publicly available before the filing date of a patent application, including other patents and patent applications, which determine novelty and non-obviousness of subject matter.[55]

The spotlight on the informing function (rather than communicating in general) fits the patent system's principal goal—disseminating knowledge in exchange for exclusive rights. Numerous articles and abundant case law addressed patents as information distributors, but hardly any studied the communicative aspect. Namely, the organizing principle of the current approach is dissemination rather than communication.

2. Linearity

The current conception of patent communication is of a one-way communication channel: Information passes from the patentee to others, without a reply. Even the social pact metaphor, widely applied to the patent system, reflects communication linearity in the patent system: Patentees pay for exclusivity with the information they disclose.[56] This conception disregards other channels that diverge from the usual patentee-to-public trajectory. Therefore, this approach views patent communication as limited to what a patentee broadcasts to a receiver, with the issue of recipient feedback overlooked.

3. Sender-Centric Perspective

The third element is the dominance of the applicant in patent communication, in the sense that patent communication is sender-centric. The current view perceives the applicant as the dominant player in patent communication. The applicant formulates the communication and chooses what to disclose, as well as when and how. No other players—specifically, not the public—are party to this act.

I do not contend that the current paradigm views the applicant as holding absolute control over patent communication. Some legal rules impose limits on the applicant's dominance (drawing standards[57] or rejection of claims[58]), however, under the current

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[52] *W.L. Gore Associates, v. Garlock*, 721 F.2d 1540 (1983); Seymore, *The Teaching Function,* supra note 3.

[53] *Integra Lifesciences v. Merck*, 331 F.3d 860, 873 (2003); Anderson, supra note 97, at 1585.

[54] *Graham v. John Deere*, 383 U.S. 1, 17 (1966).

[55] 35 U.S.C §102.

[56] Sean Seymore, *Symposium*, 69 VAND. L. REV. 1455, 1455 (2016).

[57] 37 C.F.R. §1.84.

[58] 37 C.F.R. §1.104(c).

conception the applicant remains the most powerful player in patent communication. This conception overlooks the substantial roles other players take on.

4. Publicity

The present conception of patent communication is oriented toward communication that transpires in the public sphere—primarily via the disclosure requirement—and not in the private sphere. However, alongside the public sphere, other private, sometimes confidential spheres are evident, such as patent licensing, patent settlements, and applicant-patent attorney communication—all of which occur in a private setting. This non-public communication flies under the current paradigm's radar.

Importantly, I do not argue that all patent communications must be public. Some media, including the patent medium, allow participants to communicate with various degrees of access. However, I do argue that we are inclined to disregard the communicative value of non-public channels, and that this results in misconception of patent communication.

5. Few Players

The existing paradigm primarily focuses on a single protagonist—the applicant—and two deuteragonists—the public and the PTO. This paradigm neglects to account for the communicative value of various players in the patent medium, such as patent agents, patent attorneys, licensees, legal parties, countries, tech-fans, or journalists, despite their significance in the communication context. Even when contemplating the courts' or patent attorneys' actions, the current mindset perceives of these actions as technical-legal functions and not communicative ones.

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Jointly, the five elements comprise a communication paradigm that resembles a bulletin board: It is public and linear; namely, it is accessible to all and directed from a sender to recipients; the essence is the content; and the communication arena consists of limited types of participants—the advertiser, the public, and perhaps an advertising agent, while the advertiser is the dominant, active player, and the remaining two are relatively passive.

B. DEFICIENCIES OF THE BULLETIN-BOARD PARADIGM

This Section argues that the bulletin-board paradigm fails, at least partially, in providing convincing explanation of patent communication. To demonstrate this failure, the Section utilizes three sample phenomena in the following order: patent pledging, the early publication practice, and the first-to-file (FTF) rule. The rationale behind the choice of the sample phenomena is the patent lifecycle; To cover the whole patent lifecycle, I divide the patent timeline into three major phases and analyze one phenomenon for each of the phases: The *post-grant phase* includes issues that arise after the PTO has granted a patent (e.g., patent pledging). The *pre-grant phase* includes issues that emerge after applying for a

patent and before it is granted (e.g., early publication). The *pre-examination phase* involves issues regarding the very justification of bestowing a patent (e.g., the FTF rule). I stress the problems with the bulletin-board paradigm regarding each respective phase.

1. Patent Pledging

Patent pledges are promises by patentees not to enforce their patents under certain conditions. Pledging is a growing trend, with top firms pledging their patents.[59] Moreover, this trend has intensified during the COVID-19 pandemic, as leading firms pledged their patents.[60] Attempts to explain pledges through the bulletin-board paradigm face three significant difficulties. First, the bulletin-board paradigm only acknowledges patent communication that takes place in official documents, primarily patent disclosure. However, patentees publish pledges independently, apart from the official patent documentation.

Second, pledging is a type of communication that is entirely voluntary, as the act exceeds the disclosure requirement imposed by the patent bargain. Thus, one may ask why a patentee would bother to inform about something that is not mandatory, particularly if such a step involves waiving rights? The bulletin-board paradigm maintains that patent communication transpires only due to an obligation; therefore, the paradigm fails to cope with pledging.

Third, the bulletin-board paradigm holds that the dissemination of patent information is designated for the public's benefit. However, a patent pledge benefits both sides, primarily the patentee.[61] This must be the case, since pledging is a voluntary act, and waiving patent rights for nothing would be illogical. Thus, the bulletin-board paradigm leaves the questions regarding the reason for pledges and their communicative role unanswered.

2. Early Publication

US patent law requires publication of a patent application no later than 18 months from its filing date. Yet, practice reveals an intriguing phenomenon: Approximately half of applicants request that the PTO publish their application earlier.[62] Moreover, US patent law allows applicants who waived foreign filing rights to opt out of the 18-month

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[59] Google, *Open Patents Non-assertion Pledge*, GOOGLE, https://www.google.com/patents/opnpledge/pledge/; Microsoft, *Open Specification Promise*, MICROSOFT (2007), https://docs.microsoft.com/en-us/openspecs/dev_center/ms-devcentlp/1c24c7c8-28b0-4ce1-a47d-95fe1ff504bc; Elon Musk, *All Our Patent Are Belong to You,* TESLA (2014), https://www.tesla.com/blog/all-our-patent-are-belong-you.

[60] Moderna, *Statement by Moderna on Intellectual Property Matters during the COVID-19 Pandemic*, MODERNA, https://investors.modernatx.com/news-releases/news-release-details/statement-moderna-intellectual-property-matters-during-covid-19; Open Covid Pledge, *The Pledgors*, OPEN COVID PLEDGE, https://opencovidpledge.org/partners/.

[61] Contreras, *Patent Pledges*, supra note 19, at 593; Liza Vertinsky, *Hidden Costs of Free Patents*, 78 OHIO ST. L.J 1379 (2018).

[62] Supra note 17.

deadline, so an application is entitled to a further period of secrecy before its publication.[63] Interestingly, scholars have found that 21% of applicants that were eligible to opt out of the 18-month deadline chose not to do so.[64] Note that the early publication and non-opting out neither confer patent rights nor expedite the examination process.

Efforts to explain this practice using the bulletin-board paradigm face two major obstacles. First, the bulletin-board paradigm maintains that publication is only a means to obtain the applicant's interest, which is patent rights. In fact, commentators perceive such publication as a sacrifice on the part of applicants, against their interest, which patent law aims to solve by incentivizing disclosure. Hence, we would expect applicants to try disclosing as little information as possible and defer the disclosure to the greatest extent possible (at the least until the patent is granted). However, reality proves otherwise; not only do applicants not opt out of the 18-month deadline, but many even seek to publish earlier. Applying the bulletin-board paradigm leads to a counterintuitive conclusion, whereby applicants appear to be acting against their own interests.

Second, the bulletin-board paradigm assumes that publication has a unilateral purpose—to inform the public regarding technical and legal issues. However, recall that at the early publication stage, the application is still under examination. Namely, the PTO has not approved the technical and legal significance of the application. Hence, such information does not fulfill the traditional communicative goal of the patent system, and thus, there is no reason to publish this information before it is relevant; i.e., the PTO should not approve early publication. Nevertheless, early publication is a common, official practice in patent law.

3. First-to-File (FTF) Rule

The America Invents Act transitioned the American patent system from a first-to-invent (FTI) system to a FTF system. To justify the FTF reform, commentators raised, *inter alia*, communication-related arguments (though they did not use this terminology explicitly). One argument cited the incentive for early disclosure: FTF makes the filing date crucial; therefore, inventors would apply for a patent sooner, and consequently, information would be available earlier. This argument coincides with the bulletin-board paradigm, which advocates the value of patents' informing function—the sooner, the better.

However, applying the bulletin-board paradigm to the FTF reform fails to explain one issue—the changes that FTF involves for participants other than the public. The bulletin-board paradigm underscores the communicative contribution of the FTF reform for recipients in the patent space; that is, expediting the arrival of patent information to the public. But what are the communicative implications of the FTF reform from other

[63] 37 C.F.R. 1.213.

[64] Supra note 18.

participants' perspective? For instance, from the perspective of (potential) senders? PTOs? other participants in the patent space?

V. A NEW, PREFERABLE COMMUNICATION PARADIGM: THE PATENT MEDIUM AS A NETWORK

This Part aims to formulate a new, alternative communication paradigm of patent communication: the *network paradigm*. Section A defines the network paradigm through five features. Section B summons again the three sample phenomena discussed earlier to demonstrate the superiority of the network paradigm over the bulletin-board paradigm. Accordingly, I suggest adopting the network paradigm as a more holistic outlook upon the patent medium. This proposal resembles the shift in communication studies from a simple, linear model to a branched, transactional model.

A. THE NETWORK PARADIGM

This Section introduces five communicative elements of the network paradigm and juxtaposes each with the respective feature in the bulletin-board paradigm.

1. 'The What': The Communicating Function

The bulletin-board paradigm analysis underscores that the primary use of the patent medium is to inform others. Under the network paradigm, however, the focus is on communicating. Instead of merely informing others, the patent medium facilitates various communicative ends: critique, public relations, debating, brainstorming, misleading, establishing or substantiating a community, and more.[65]

Moreover, one communicative act in the patent medium can serve multiple purposes. A patent text can fulfill a certain goal toward the PTO (e.g., proving novelty in the legal sense), another goal vis-à-vis consumers (by sensing their reception of a possible innovation), and an entirely different goal toward competitors (such as contouring a territory of technological dominance). Another example of the multiple communicative goals is a patent pledge, through which a patentee can both improve public relations and signal willingness to collaborate.[66]

Other examples are patent challenges and patent oppositions. Alongside its legal purpose, the act of opposing a patent application or challenging a patent can serve as a

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[65] Patently Apple, https://www.patentlyapple.com/; Patently Mobile, https://www.patentlymobile.com/; GizmoChina-Patents, https://www.gizmochina.com/?s=patents; Alan Friedman, *Apple's Latest Patent Application is Related to an Accessory We Could See Early Next Year*, PHONEARENA (2019), https://www.phonearena.com/news/New-patent-applicated-filed-for-Apple-Tags_id119762; Michael Zhang, *Canon Designed a Crazy 50-80mm f/1.1 Lens*, PETAPIXEL (2019), https://petapixel.com/2019/08/10/canon-designed-a-50-80mm-f-1-1-lens/; supra notes 4-8.

[66] JONATHAN BARNETT, INNOVATORS, FIRMS, AND MARKETS (2021); Contreras, *Patent Pledges*, supra note 19, at 593.

social activism tool. The Myriad case offers a particularly interesting example of how patent challenging serves (also) as an act of social activism.[67] The Myriad case addressed questions regarding gene patenting. Throughout this case, many activists were eager to express their views, and their assertions consisted of more than just legal arguments; they raised arguments regarding human dignity, patient rights, access to healthcare, anti-commodification of the human genome, and scientific freedom—issues rooted in moral philosophy and political sociology, not patent law.[68] Moreover, one of the parties that filed the action is the American Civil Liberties Union, an activism organization, which referred the case as a "fight to take back our genes."[69] The Myriad case is part of a wider array of social activism and resistance to gene patenting.[70] The point here is that when we view patent challenges, we traditionally focus on the legal-economic ends, which coincide with the bulletin-board paradigm, while overlooking the other ends, such as activism and social change. These non-traditional ends do not replace the traditional ones, but pile up in addition to them.

Another relevant point in the context of communicating (rather than merely informing) is the distinction between content and meta-data. Under the bulletin-board paradigm, the patent medium's primary component is the content, and more specifically, the disclosure. The focus on disclosure makes sense when considering the informing function. However, the disclosure is not the only useful constituent. Various content and meta-data of the patent system comprise relevant components of the patent medium, including file wrappers,[71] reexamination or invalidation proceedings, PTO announcements, pledges, licensing, the 'Patent' and 'Patent Pending' symbols,[72] and patent statistics. For instance, file wrappers, an extra-disclosure element, hold both content and meta-data regarding the examination of a patent application, chiefly PTO-applicant correspondences. The content of file wrappers bears high value for competitors who wish to better understand the applicant's achievements and struggles, which may be beneficial for uses such as patent challenging.[73]

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[67] *Association for Molecular Pathology v. Myriad Genetics*, 569 U.S. 576 (2013); ACLU, *The Fight to Take Back Our Genes*, ACLU (https://www.aclu.org/issues/privacy-technology/medical-and-genetic-privacy/fight-take-back-our-genes?redirect=fight-take-back-our-genes).

[68] Jorge Contreras, *Narratives of Gene Patenting*, 43 FLA. ST. U. L. REV. 1133, 1162-69 (2016).

[69] ACLU, *The Fight to Take*, supra note 67.

[70] *Diamond v. Chakrabarty*, 447 U.S. 303 (1980)*;* Contreras, *Narratives of Gene*, supra note 68; Gargi Parsai, *Opposition to Monsanto Patent on Indian Melons*, THE HINDU (2012), https://www.thehindu.com/news/national/opposition-to-monsanto-patent-on-indian-melons/article2861063.ece.

[71] File-wrapper is a written record of correspondences between the PTO and an applicant during the examination process.

[72] E.g., 35 U.S.C. §§287, 292.

[73] In accordance with the prosecution history estoppel: *Festo Corp. v Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002).

For the importance of meta-data in patent communication, consider the example of the obsessive engagement of political and business entities with patent statistics—meta-data derived from the patent space—to outline a hierarchy. The patent hierarchy discourse is a part of a wider competitive discourse, especially in the comparing amongst superpowers (e.g., the national number of patents[74]) and multinational companies (e.g., the size of a 'patent portfolio,' or the collection of all patents a firm holds[75]).

Importantly, the network paradigm does not reject the informing function, but in addition points at the significance of other (overlooked) communications in the patent medium.

2. 'The How': Multi-Directional Flow

The bulletin-board paradigm comprises a linear communication, with messages flowing from the applicant to the public, but not in the reverse direction. In contrast, the organizing principle of the network paradigm is multi-directionality. The multi-directional flow recognizes the potential and importance of a feedback loop, allowing simultaneous, parallel actions by different players.

A communication flow from the public to the applicant/patentee is evident in the case of patent reviews. Patent reviews are a genre of online writing that resembles a consumer review:[76] A tech-journalist updates about a patent application or a newly granted patent and reviews the invention at hand; such a review is usually open for public discussion, allowing others to scrutinize, praise, criticize, or mock the invention.[77] Besides creating a buzz or establishing a community, such comments are useful to applicants or patentees.[78] Namely, patent reviews are a message goes in a different direction than the traditional, patentee-to-public flow.

Another instance is the continuation practice.[79] A continuing patent application is an application that follows a previously-filed application. The continuation procedure allows for a discourse: An applicant files for a patent; the market then reacts to this application; after which the applicant uses continuations to account for such reactions, and the public can react again, etc. Namely, there is a conversation—not one-sided announcements—that transpires through the patent medium. For example, Rambus, a semiconductor

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[74] South China Morning Post, *China Files the Most Patents*, ABCUS NEWS (2019), https://www.abacusnews.com/tech/chinas-patent-applications-hit-15-million-2018-more-double-us/article/3033552; Cohen, *A Breakthrough in American*, supra note 6.

[75] Louis Columbus, *The Most Innovative Tech Companies Based on Patent Analytics*, FORBES (2019), https://www.forbes.com/sites/louiscolumbus/2019/12/15/the-most-innovative-tech-companies-based-on-patent-analytics/; Susan Decker, *Huawei Has 56,492 Patents and It Is Not Afraid to Use Them*, BLOOMBERG (2019), https://www.bloomberg.com/news/articles/2019-06-14/huawei-has-56-492-patents-and-it-s-not-afraid-to-use-them.

[76] See: Patently Apple, Patently Mobile, and GizmoChina, supra note 65.

[77] Zhang, *Canon Designed*, supra note 65.

[78] JANELLE BARLOW & CLAUS MOLLER, A COMPLAINT IS A GIFT (2008).

[79] 35 U.S.C. §111(a); 37 C.F.R. §1.53(b).

company, repeatedly filed continuations that successively captured developments in its field. Both the court and the International Trade Commission discussed this practice by Rambus.[80]

3. Levels of Access: Public and Private Spheres

Communication processes within the patent medium are not always transparent, yet they comprise an integral part of patent communication. Some instances of such private communications include applicant communication with the patent attorney, patentee-licensee communication, patentee-rival communication in settling a dispute, or applicant/patentee-PTO communication (i.e., communication that does not reside in the prosecution file history). Whereas the bulletin-board paradigm focuses only on the public sphere—i.e., the patent disclosure—the network paradigm expands the view to both public and private spheres.

Private connections affect patent communication, including its public sphere. For example, the applicant's communication with the patent agent influences the content and style of patent documents, the timing of various events (e.g., applying for or abandoning a patent), and the approval/rejection of an application. Other examples are confidential patent license and dispute resolution: such procedures are usually confidential (namely, a private sphere), thought cause other players to play in a 'blind' market (i.e., a public sphere).[81]

Acknowledging that patent communication comprises of more than just public channels, exposes the actual complexity of patent communication. For instance, characterizing the elements in the (private) applicant-patent agent communication unveils various considerations in formulating a patent application besides obtaining broad patent rights, like the applicant's intention to lie low and avoid opposition or the agent's desire to maintain a high success rate. Namely, analyzing private channels allows better understanding of the public channel and the communication settings.

4. 'The Who': Multiple Participants

The bulletin-board paradigm views the patent medium as a ternary complex: The applicant/patentee, the public, and the PTO. These are the most basic participants, however, additional players take part in the discourse, including licensees, legal parties (e.g., patent challengers), courts, patent attorneys, journalists, consumers, tech-fans, organizations (e.g., WIPO, WTO, OECD), and political entities.

In this context, intermediaries deserve particular attention. Intermediaries can decide what messages others see, in which context, and when. The intermediation functions include selecting, adding, withholding, displaying, channeling, shaping, manipulating,

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[80] *Rambus v. Infineon Technologies AG,* 330 F. Supp. 2d 679 (E.D. Va. 2004); U.S. International Trade Commission, Investigation Nos. 337-TA-753, publication 4386, at 248-54 (2013).

[81] Mark Lemley & Nathan Myhrvold, *How to Make a Patent Market*, 36 HOFSTRA L. REV. 257 (2007).

repeating, timing, localizing, integrating, disregarding, and deleting information.[82] Different combinations of such functions lead to various archetypes of intermediaries: gatekeepers, directors, regulators, recorders, editors, integrators, representatives, reproducers, and carriers.[83]

Applying the *two-step flow model*—a longstanding theory in communication studies[84]—underscores the importance of intermediaries in patent communication. The two-step flow model posits that most people form their opinions under the influence of *opinion leaders*.[85] Opinion leaders are super-active, expert users who interpret messages for lower-end users, e.g., teachers or media professionals. Opinion leaders diffuse communications, as they explain and spread the message to others, although not necessarily in accordance with the sender's intention.

Opinion leadership suggests that a major part of communication depends neither on the sender nor on original content, but rather on intermediaries. Opinion leaders in the patent medium are particularly essential, because patent communication most often requires a certain degree of expertise, be it of a legal or technological orientation.

The two-step flow model enables us to comprehend ideas and arguments that thus far were hypothetical or vague. For instance, Long, Asay, and Anderson have argued that patentees use patent disclosure and pledges to signal to consumers and investors. However, a large proportion of recipients do not actually read patent documents. Someone must mediate the message for them; intermediaries, such as investment advisors, patent experts and attorneys, journalists, scientists, and activists act as opinion leaders. Without intermediation, one cannot understand patent communication.

5. A Repeated Game: Continuous Communication

The patent system is not a single-shot game but more often a repeated one. It is a game of many iterations, in which players engage in continuous communication, with each interchange affected by previous actions and affecting future actions.

Under the bulletin-board paradigm, once a patent is published (or rejected before publication), the game is over. Some have discussed patent portfolios,[86] but they approached them with a commercial orientation, not a communicative one. Unlike the bulletin-board paradigm, the network paradigm grasps communication as a continuous, ongoing process with an indeterminate number of stages. Even when a message concerns a particular patent, it is merely a segment of a more extensive communication process.

The continuation practice described earlier provides a good example of the ongoing game. Moderna's mRNA patents demonstrate such dynamics: Moderna filed the key

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[82] Karine Nahon, *Toward a Theory of Network Gatekeeping*, 59 J. AM. SOC'Y INFO. SCI. & TECH. 1493 (2008).

[83] Davis Foulger, *Roles In Media* (2002), http://davis.foulger.info/presentations/rolesInMedia.htm.

[84] Elihu Katz, *The Two-Step Flow of Communication*, 21 POL. OPINION Q. 61 (1957).

[85] ROBERT MERTON, SOCIAL THEORY AND SOCIAL STRUCTURE 467-69 (1957).

[86] Gideon Parchomovsky & Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1 (2005).

patents for its mRNA vaccine years ago, which naturally make no mention of COVID-19.[87] Today, Moderna is filing continuations that specifically cover COVID-19-related developments.[88] Moderna can better react to changes (in addition to securing its commercial interests) through continuations. Namely, continuations are auxiliary communications within a specific context of previous moves in the repeated patent game.

Viewing the patent medium as a repeated game makes much sense considering empirical data: Most patentees are frequent patentees who engage repeatedly in the patent system.[89] Other players in the patent space—e.g., patent agents and attorneys, PTOs, courts, scientists, competitors, journalists, investors, and consumers—are also frequent participants.

A repeated game renders the patent system as an arena with features such as cooperation, reward-and-punishment, and reputation. For instance, in iterated games of unknown rounds (such as the patent medium), the preferred strategy is not a Nash strategy but a socially optimum strategy.[90] Accordingly, patent communication is a viable strategy that happens voluntarily, not only because of the obligation imposed by the patent bargain. Moreover, unlike the classical view of a single-shot patent game, in which deceiving and concealing are the favorable strategies, the network paradigm—through the repeated game notion—reveals the incentives for cooperation, trust, and honesty among participants, more often than we might assume.

For example, incorporating reputation systems and reward-and-punishment methods into patent communication enables us to better rationalize licensing, cross-licensing, and patent pledges. Licensing or pledging of valuable patents may sometime look irrational under a single-shot game view, as parties (seem to) act against their interests. However, licensing or pledging a precious asset (like COVID-19-related patents) makes perfect sense when considering the repeated game notion: Sometimes, one strategically licenses or cross-licenses patent rights to others—namely, plays cooperatively—as there are reasonable chances the former would need the latter in the future. In addition, at times, patentees must manifest solidarity with the public, including voluntarily pledging a promising patent, as part of long-term planning regarding public image, branding and consumerism. The repeated game concept suggests that such acts hold a communicative value, reflecting features as cooperation, solidarity, or decency; and as a part of a continuous communication, they could be of high value, sometimes even imperative, for later stages of the game.

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[87] U.S. Patent No. US10272150 (filed Jul. 20, 2018).

[88] U.S. Patent No. US10702600 (filed Feb. 28, 2020).

[89] USPTO, Patent Assignment Dataset (2021), https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset.

[90] Robert Aumann, *Acceptable Points in General Cooperative n-person Games*, *in* CONTRIBUTIONS TO THE THEORY OF GAMES IV, 287 (1959).

Table 1 recapitulates the features of the bulletin-board and the network paradigms:

The Bulletin-Board Paradigm	The Network Paradigm
Informing	Communicating
Linearity	Multi-Directional Flow
A Sender-Centric Platform	Complex Relationships
A Public Channel	Public & Private Channels
A Limited Number of Players	Multiple Participants
A Single-Shot Game	A Repeated Game

Table 1: The Bulletin-Board Paradigm vs. the Network Paradigm

The table underscores that the bulletin-board paradigm resembles the linear model, whereas the network paradigm is closer to the transactional model. Communication studies moved from a linear to a transactional mindset, as they found the latter better reflecting a real-world scheme of communication. Likewise, I propose that we should adopt the network paradigm. However, the analogy to communication studies is not the only reason; I argue that the network paradigm serves as a better explanatory tool, as demonstrated in the next Section.

B. THE NETWORK PARADIGM AS AN EXPLANATORY TOOL

The Section summons again the three sample phenomena from Part IV(B) and applies the network paradigm to illustrate its fine explanatory power. I show that the network paradigm succeeds where the bulletin board fails. Therefore, the Article's proposal is anchored not only in theoretical reasons and a similar shift in communication studies; the network paradigm also provides better practical tools to advance our understandings in patent law.

1. Rethinking Patent Pledging

The bulletin-board paradigm encountered three major difficulties in explaining pledging, i.e., waving patent rights fully or partially. First, whereas the bulletin-board paradigm focuses on the formal patent communication, particularly patent disclosure, pledging is an unofficial channel. Second, whereas the bulletin-board paradigm assumes that patent communications transpire only under the obligation of the patent bargain, pledging is a non-mandatory act of patent communication. Finally, the bulletin-board paradigm perceives patent communication as having unilateral purposes of benefiting the public; yet the unavoidable conclusion that pledging must benefit (also) patentees contradicts this approach and suggests that pledges serve multilateral purposes. The network paradigm, on the other hand, offers a fuller explanation of patent pledging and addresses these three issues using two elements of the network paradigm: the communicating function and the repeated game approach.

Applying the communicating function to patent pledging resolves the issue of pledges as an unofficial, non-PTO-mediated channel. According to the communicating function, the network paradigm does not limit its view to patent disclosure, and more generally to official channels. Instead of formal information broadcasting, the network paradigm depicts patent communication as a discourse. Thus, patentees communicate with other players also in non-traditional manners; i.e., not exclusively through the official patent documents, but also through various patent-related instruments, including pledges.

The discourse notion is also helpful in facilitating the second problem—pledging as non-mandatory communication—and perhaps a more general question: what is the explanation for the very existence of voluntary actions in the patent space? A discourse, as opposed to formal-technical exchange, is not subject to mandatory communication. Players can and do voluntarily participate in a discourse and not only when they are obliged to, because they have an interest in doing so. Put differently, the network paradigm posits that on top of the mandatory legal-technical communication, there are voluntary communications transpiring through the patent medium.

The pledging discourse is an example of such voluntary communication. Patentees usually declare ideological grounds for their pledges, such as pledging "in the spirit of the open-source movement" designed to enhance competition and innovation[91] or to help humanity.[92] But are there other, more down-to-earth interests in participating in the pledging discourse? The repeated game feature, another central element of the network paradigm, suggests a positive answer: In a continuous interaction like patent communication, waiving rights (or other ostensibly altruistic deeds) makes much sense as a strategic move. For instance, patent pledging leads, naturally, to a positive public image for the pledger. Therefore, it may be worthwhile to pledge a patent at one stage of the game to evade sharp public criticism or to commercialize (the same or other) inventions more effectively at future stages. Such considerations are particularly relevant at times when solidarity is needed and the public is hypercritical, such as during crises; indeed, this analysis perfectly coincides with the COVID-19 pledges. Namely, pledges can do more than merely inform about legal changes (e.g., non-enforcement of patent rights); a pledge is a more complex, multipurpose discourse. Tesla's patent pledge[93] is one instance that demonstrates the discourse-like nature of the patent space, specifically through pledging; the Tesla's pledge drew much public reaction, praising Tesla for its (allegedly) altruistic and brave move.[94] Such a pledge is an additional step in enhancing the hype

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[91] Google, *Open Patents*, supra note 59; Musk, *All Our Patent*, supra note 59; Toyota, *Toyota Opens Its Fuel Cell Vehicle Patents for Free Use*, TOYOTA (2015), https://global.toyota/en/detail/4663648.

[92] Moderna, *Statement by Moderna*, supra note 60.

[93] Musk, *All Our Patent*, supra note 59.

[94] Matthew Rimmer, *Elon Musk's Open Innovation*, *in* INTELLECTUAL PROPERTY AND CLEAN ENERGY 515 (2018); Elon Musk, TWITTER (January 31st, 2019) https://twitter.com/elonmusk/status/1091080660100440065.

around Tesla's and its founder Elon Musk's business, and supporting their unique public image.

From a broad perspective, introducing the repeated game notion highlights that patent communication holds more than unilateral purposes of informing the public about legal or technical issues. Patent communication has multilateral purposes encouraging a discourse, potentially benefiting all participants. For instance, pledging can promote public relations (i.e., benefits the pledgor), serve as an advertisement (i.e., benefits the pledgor and consumers), call for collaborations (i.e., benefits the pledgor and potential partners), encourage innovation (i.e., benefits competitors and the public), and so forth.[95]

As a side comment, note that a patent pledging discourse can be driven by other players rather than the pledger itself; for example, commentators,[96] politicians,[97] and competitors[98] might initiate or enhance the pledging discourse. The fact that various players, not only pledgers, can initiate and react to a pledging discourse is also explained by the network paradigm, mainly through two elements: multi-directionality (i.e., patent communication can come from and to different directions) and multiple active participants (i.e., the applicant/patentee is not the only active participant within the patent medium). Moreover, patent pledges clearly reveal the importance of intermediaries, a critical point in the network paradigm, as pledges are not part of the formal patent documents, and thus get published through the intervention of expert intermediaries such as commentators and journalists, and not the conventional PTO intermediary.

2. Rethinking Early Publication

Applying the bulletin-board paradigm to the case of early publication leaves us with two unresolved issues. The common assumption regarding applicants would predict that they would postpone publication as much as possible, but instead they actively request to publish before their deadline. Also, the bulletin-board paradigm maintains that patent communication takes place to inform about technological and legal matters; however, early publication, by definition, publicizes material that has not been approved by the PTO yet, and thus may contain irrelevant or wrong information. So how do we explain the common practice of early publication? To address these issues, the next paragraphs harness the power of the network paradigm, specifically three of its elements: the communicating function, multi-directionality, and multiple participants.

A fundamental difference exists between the two paradigms: The bulletin board conceptualizes publication (and generally, patent communication) as a means; that is, publishing *solely* for the purpose of attaining patent rights. In contrast, the network

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[95] Vertinsky, *Hidden Costs*, supra note 61.

[96] Open Covid Pledge, *About Us*, supra note 60.

[97] BBC, *Covid: US Backs Waiver on Vaccine Patents to Boost Supply*, BBC (2021), https://www.bbc.com/news/world-us-canada-57004302; World Trade Organization, *Members Discuss TRIPS Waiver, LDC Transition Period and Green Tech Role for Small Business*, WTO (2021).

[98] Rimmer, *Elon Musk's Open Innovation*, supra note 94, at 533-37; Toyota, *Toyota Opens Its*, supra note 91.

paradigm perceives of patent communication as an independent end. This conclusion is derived from the communicating function element, drawing a theoretical distinction between the bulletin-board paradigm and the network paradigm; in particular, the former grasps patent communication as the price for patent rights, while the latter has a more complex understanding of patent communication. Specifically, such communication sometimes comprises a burden, sometimes a prize, and frequently a bit of both. Adopting the network paradigm's approach allows for a better explanation of the patent system, as the practice of early publication shows: Indeed, applicants will not gain patent rights as a result of requesting early publication, but that is not their goal. Early publication serves other interests, such as misleading competitors, creating a buzz in the capital market, or acquiring consumer feedback. Patent communication does not have to lead to a patent grant. Just like in the case of patent pledging, there are many motives in requesting early publication, and the bulletin-board paradigm is looking for the wrong one.

Regarding the second issue with early publication, the other two elements—multiple participants and the multi-directionality—are at play as well. Given the multitude of interests and parties involved, it does not matter if early publication conveys patent-eligible information. The goal is to communicate through the patent medium, and the early publication practice delivers this goal. The multiplayers element, a linchpin in the network paradigm, supports this point: Even though the public (and traditionally, competitors and down-stream inventors) may see none or merely minor legal and technical significance in early published information, other players, such as investors, tech-fans, and consumers, can take great interest in this information.

But why would one prefer to communicate particularly through the patent medium? The answer is that the patent medium contains a rare combination of various communicative features, which give the message certain qualities that are hard to achieve through other media. The patent medium differs from a TV commercial or a press announcement, as patent communications—which of course do not necessarily substitute other communications but usually transpire in addition to them—offer unique effects, such as credibility, interactivity, a professional-technical context with legal orientation, (partial) official identification of participants, and a governmentally regulated platform. Each feature may be available elsewhere; however, a medium that combines all of them together is quite rare.

3. Rethinking First-to-File

The bulletin-board paradigm explains partially the communicative implications of the FTF reform, focusing on expediting publication. I argue that the network paradigm provides a fuller explanation: Applying the element of different levels of access (i.e., private and public spheres) maintains that the FTF rule is not merely about the speed of patent communication but also about better quality and reliability of patent communication.

When discussing the levels of access element, I indicated how private channels—not only public ones—can affect patent communication. I now illustrate this point by reflecting upon the FTF rule through the private-public spheres, with a focus on the case of *secret prior art*.[99] Under the FTI concept, an applicant was not entitled to a patent if the pertinent invention was already accomplished by another.[100] This exclusion is inherent to the FTI concept, maintaining that the person eligible for a patent for an invention is the first to invent it. This situation led to an odd state of secret prior art: Applicants could not know, in principle, whether there is prior art—in the form of an invention in the possession of a first inventor—that blocks their patent application, as such prior art is discreet.[101] Secret prior art impaired the trust and reliability of available prior art as it may not reflect reality, and more generally, prevented the patent medium from communicating the actual state-of-art.

Secret prior art is a particular case that emphasizes the possible detrimental effects of a private channel on patent communication in general, as the network paradigm suggests. The secret prior art issue involves damage in terms of communication quality and reliability within the patent medium. The FTF rule solved, or at least significantly restricted,[102] the problem of secret prior art by simply dictating that the first inventor to file is the person eligible for a patent, regardless of any potential previous secret inventions.

Note that even under the FTF rule, there are some semi-discreet uses of an invention that are not known to the world at large but transpire as prior art;[103] still, the FTF rule mitigated dramatically the scope of secret prior art.[104] Consequently, the FTF reform enhanced not only the speed but also the quality of patent communication.

VI. CONCLUSION

The patent system is not just a platform for monetizing inventions or disseminating information; it is an arena of communication—a medium. The patent medium enables participants to converse with each other in unique ways.

This Article argued that the current, implicit mindset towards patent communication perceives it as linear and informative, consisting of few participants, focusing on senders. This approach—defined here as the bulletin-board paradigm—covers patent communication only partially and fails to offer explanations for various phenomena in

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[99] When using 'secret prior art' I refer to non-pending prior inventions, and not the on-sale bar prior art (see pre-AIA §§ 102(f)-(g); *Helsinn Healthcare v. Teva Pharmaceuticals,* 855 F. 3d 1356 (2019)).

[100] Pre-AIA § 102(g).

[101] Douglass Thomas, *Secret Prior Art*, 9 HARV. J.L. & TECH. 147, 150-51 (1996).

[102] Thomas, *Secret Prior Art*, id, at 168.

[103] *Helsinn v. Teva*, supra note 99; Thomas, *Secret Prior Art*, supra note 101.

[104] Thomas, *Secret Prior Art*, supra note 101.

patent law. Instead, this Article suggests adopting an alternative paradigm—the network paradigm. The network paradigm depicts patent communication as a continuous game, with multiple players, allowing messages to flow in many directions and under different levels of access. Instead of merely informing, the network paradigm suggests that the patent medium allows for a discourse.

The network paradigm offers useful explanatory power that we can apply to better comprehend the patent system, as demonstrated through the three sample phenomena. I encourage scholars to apply the network paradigm to other patent-related phenomena. Such implementation will fine-tune the network paradigm and highlight its limitations.