

Article

An Embedded Options Theory of Indefinite Contracts

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Language is opaque, and people do not always state what they mean clearly. This presents an obvious problem for contract law when courts must decide how to interpret an ambiguous agreement. Should a judge pull out the dictionary, adopt a popular solution, impose a penalty term to encourage future parties to spell it out themselves, or do something else?¹

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1. A number of recent articles explore these, and other, approaches for interpreting ambiguous contracts. See, e.g., George M. Cohen, *Implied Terms and Interpretation in Contract Law*, in 1 *ENCYCLOPEDIA OF LAW AND ECONOMICS* 78, 78–99 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000) (examining the economic arguments with respect to textualism and contextualism in contract interpretation); Gillian K. Hadfield, *Judicial Competence and the Interpretation of Incomplete Contracts*, 23 *J. LEGAL STUD.* 159 (1994) (exploring judicial competence and interpretation of incomplete contracts from an analytical perspective); Avery Wiener Katz, *The Economics of Form and Substance in Contract Interpretation*, 104 *COLUM. L. REV.* 496 (2004) (proposing a framework within which parties can choose between form and substance in contract formation); Eyal Zamir, *The Inverted Hierarchy of Contract Interpretation and Supplementation*, 97 *COLUM. L. REV.* 1710 (1997) (arguing that an inverted hierarchy of contract interpretation and supplementation better conforms to legal doctrine and judicial practice, the actual behavior of contracting

But before a court can even get to the interpretive question, it must first decide whether a “real” contract exists. The indefiniteness doctrine maintains that when material terms to an agreement are too ambiguous or uncertain, there is a fatal problem, and the contract is void.² The law cannot possibly find a binding agreement when contracts are riddled with holes like Swiss cheese.

Courts have struggled to define the appropriate boundaries of the indefiniteness doctrine. While the common law traditionally favored strict application of the doctrine,³ this approach has given way to a less formal one—echoing changes in other areas of contract law.⁴ Both the Uniform Commercial Code⁵

parties, and important ethical and social considerations). The choice in contract law between majoritarian default rules and penalty default rules is also relevant to the optimal interpretive approach. See Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87 (1989) (describing the notion of penalty defaults); Eric A. Posner, *Economic Analysis of Contract Law After Three Decades: Success or Failure?*, 112 YALE L.J. 829, 839–42 (2003) (linking interpretive approaches in contract law to the penalty default literature).

2. See, e.g., E. ALLAN FARNSWORTH, CONTRACTS § 3.27 (4th ed. 2004) (describing the requirement of definiteness); JOHN EDWARD MURRAY, JR., MURRAY ON CONTRACTS § 38 (4th ed. 2001) (stating that no contract will exist, even if the parties intend to form a contract, when the terms lack sufficient definiteness and reasonable certainty); JOSEPH M. PERILLO, CALAMARI AND PERILLO ON CONTRACTS § 2.9, at 51 (5th ed. 2003) (“The traditional rule is that if the agreement is not *reasonably* certain as to its *material* terms there is a fatal indefiniteness and the agreement is void.”). The Restatement (Second) of Contracts adopts the indefiniteness doctrine as follows: “Even though a manifestation of intention is intended to be understood as an offer, it cannot be accepted so as to form a contract unless the terms of the contract are reasonably certain.” RESTATEMENT (SECOND) OF CONTRACTS §33(1) (1981). The rule finds justification in “the fundamental policy that contracts should be made by the parties, not by the courts.” *Id.* § 33(2) cmt. b.

3. See, e.g., *Walker v. Keith*, 382 S.W.2d 198, 203 (Ky. 1964) (declining to enforce an agreement to renew a lease with terms to be fixed by “comparative business conditions”); *Varney v. Ditmars*, 111 N.E. 822, 823 (N.Y. 1916) (striking down an employment contract for a “fair share of my profits”).

4. On the evolution of indefiniteness doctrine in this manner, see *infra* Part I.B. More generally, the tension between formalism and realism in contract law is famously described in GRANT GILMORE, *THE DEATH OF CONTRACT* (Ronald K.L. Collins ed., 2d ed. 1995). Recently the same tension was explored in David Charny, *The New Formalism in Contract*, 66 U. CHI. L. REV. 842 (1999).

5. U.C.C. § 2-204(3) (2004) (“Even if one or more terms are left open, a contract for sale does not fail for indefiniteness if the parties have intended to make a contract and there is a reasonably certain basis for giving an appropriate remedy.”).

and numerous commentators⁶ call for greater judicial gap filling and a scaled-back notion of indefiniteness. The goal is to support a person's contractual intentions, even if this means more interpretive work for the courts.⁷ Conventional wisdom says that the indefiniteness doctrine is dead—or at least in its waning hours.⁸

A recent empirical study by Robert Scott, however, finds the indefiniteness doctrine alive and well.⁹ During the five-year period ending in 2002, Professor Scott discovered 238 litigated decisions in state and federal courts involving indefinite contracts.¹⁰ Indefiniteness played a major role in two-thirds of these cases, and the courts often voided contracts because an “agreement was too . . . uncertain [to be] legally [en]forceable as a contract.”¹¹ An updated search for the years 2003 and 2004

6. Support for active judicial gap filling takes root in both economic and philosophical approaches to contract law. The economic argument usually states that courts can save on transaction costs by filling gaps with commonly preferred terms. *See, e.g.*, Steven J. Burton, *Default Principles, Legitimacy, and the Authority of a Contract*, 3 S. CAL. INTERDISC. L.J. 115, 116–18 (1993) (citing much of the literature on gap filling); Richard Craswell, *Contract Law: General Theories*, in 1 ENCYCLOPEDIA OF LAW AND ECONOMICS, *supra* note 1, at 1, 1–2 (explaining that a set of presumptions or default rules may increase efficiency in contract drafting); Mark P. Gergen, *The Use of Open Terms In Contract*, 92 COLUM. L. REV. 997, 1061–64 (1992) (advocating for courts to enforce open terms in contracts under certain circumstances). *But see* Ayres & Gertner, *supra* note 1, at 93–95 (arguing that majoritarian gap filling is not necessarily the optimal economic approach). The philosophical argument for judicial gap filling suggests that respect for parties' true intentions sometimes requires courts to resolve ambiguities. *See, e.g.*, CHARLES FRIED, *CONTRACT AS PROMISE: A THEORY OF CONTRACTUAL OBLIGATION* 57–73 (1981) (stressing that gaps in contracts do not present a substantial problem, since the law can embrace gap-filling default principles).

7. A classic defense along these lines comes from Arthur Corbin. *See* ARTHUR L. CORBIN, *CORBIN ON CONTRACTS* § 4.1, at 528 (Joseph M. Perillo ed., rev. ed. 1993) (explaining that “all modes of human expression are defective and inadequate,” and, as such, “the function of the court is to determine . . . the intention of the contracting parties and to give legal effect thereto”).

8. *See* Robert E. Scott, *A Theory of Self-Enforcing Indefinite Agreements*, 103 COLUM. L. REV. 1641, 1643 (2003) (“Conventional wisdom holds that courts should (and do) strive whenever possible to fill contractual gaps with general standards of reasonableness and good faith.”).

9. *Id.* at 1643–44 (“[D]espite widespread academic support for more judicial gap filling, the indefiniteness doctrine lives on in the common law of contracts. In literally dozens of cases, American courts dismiss claims for breach of contract on the grounds of indefiniteness . . .”).

10. *Id.* at 1652.

11. *Id.* at 1653. In cases where indefiniteness was a central issue, the courts annulled approximately 60 percent of the contracts under the indefiniteness doctrine. More specifically, Professor Scott chose a random sample of

yields an additional 118 cases invoking the indefiniteness doctrine.¹² It is hardly dead.

This evidence presents a puzzle: why do indefinite contracts remain common when courts continue to toss them out? Parties apparently fail to make specific agreements even when it would be easy to do so.¹³ Important, detailed terms or verifiable metrics, for example, could have been added at a low cost into many of the contracts that Professor Scott studied.¹⁴ Given the still-present risk of nonenforcement under the indefiniteness doctrine, we might expect parties to state their contractual intentions more clearly.

So why do people agree to vague contracts in light of the indefiniteness doctrine?

Scholars have offered several theories. Richard Posner, among others, has recently suggested that indefinite contracts result from efforts to minimize transaction costs.¹⁵ Parties do not have the time or budget to spell out every issue in detail, and it may be rational for them to leave some terms ambiguous—to be sorted out through later negotiation or litigation, if

137 cases for detailed analysis from the 238 state and federal cases involving the indefiniteness doctrine during this time period. From this sample, 48 cases only touched on the indefiniteness doctrine peripherally (for example, the courts may have mentioned the indefiniteness requirement in prefatory language). *Id.* at 1652. In the other 89 cases directly raising the enforcement issue, the courts struck down the contracts for indefiniteness 55 times. *Id.* at 1652–53. This works out to a 61.8 percent incidence of invalid indefiniteness.

12. I replicated Professor Scott's search for 2003 and 2004 by searching Westlaw's 95k9(1) database "Contracts: Requisites and Validity: Nature and Essentials in General: Certainty as to Subject Matter: In General." I included all state and federal courts in the search. My analysis of these cases is consistent with Professor Scott's work—suggesting that courts continue to annul contracts under the indefiniteness doctrine with great frequency. *See infra* notes 105–07 and accompanying text. I caution the reader, however, not to generalize too broadly from these case reports due to sample-selection biases.

13. *See* Scott, *supra* note 8, at 1660 ("This behavior appears directly inconsistent with the assumption[] of contract theory that parties will . . . contract over verifiable terms that can be specified at low cost."); Robert E. Scott & George G. Triantis, *Anticipating Litigation in Contract Design*, 115 *YALE L.J.* 814, 818 (2006) (suggesting that parties may "replac[e] precise provisions with vague terms" when doing so may reduce the cost of future litigation); George G. Triantis, *The Efficiency of Vague Contract Terms: A Response to the Schwartz-Scott Theory of U.C.C. Article 2*, 62 *LA. L. REV.* 1065, 1068 (2002) ("[C]ontracts are often less complete than verifiability would allow.").

14. *See* Scott, *supra* note 8, at 1657–60.

15. *See* Richard A. Posner, *The Law and Economics of Contract Interpretation*, 83 *TEX. L. REV.* 1581, 1587 (2005) (discussing the relationship between transaction costs and judicial gap filling).

it comes to that.¹⁶ All contracts are indefinite, in this sense, in the same way that all contracts are incomplete: it is impossible to specify every future contingency.¹⁷ But this cannot explain why parties leave out fundamental terms of the agreement when low-cost, verifiable metrics exist.

A second possible explanation for indefinite contracts is that parties do not really care whether the contract is legally binding because they will rely on self-enforcement or private ordering instead.¹⁸ This may be particularly true if the parties enjoy a long-term commercial relationship in a close community where a good reputation, or profits from future deals, outweigh immediate breach.¹⁹ But this is likely to be just a small portion of the total contracting population because many indefinite con-

16. See *id.*; see also ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 211–17 (4th ed. 2004) (explaining why contracting parties might choose to leave gaps deliberately); Cohen, *supra* note 1, at 81 (stating that “the costs of contractual completeness . . . often exceed the benefits,” and, as such, an incomplete contract may be an efficient contract); Oliver Hart & John Moore, *Incomplete Contracts and Renegotiation*, 56 ECONOMETRICA 755, 755 (1988) (underscoring the difficulty drafters face in anticipating all conceivable contingencies); Eric A. Posner, *The Parol Evidence Rule, the Plain Meaning Rule, and the Principles of Contractual Interpretation*, 146 U. PA. L. REV. 533, 543–44 (1998) (arguing that the lower the probable occurrence of the contingency, the lower the probable benefit of including the term in the contract).

17. See COOTER & ULEN, *supra* note 16, at 211–14; STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 299–301 (2004); Craswell, *supra* note 6, § 400, at 1; Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L.J. 541, 594–95 (2003).

18. See, e.g., Charles J. Goetz & Robert E. Scott, *Principles of Relational Contracts*, 67 VA. L. REV. 1089, 1115–16 (1981) (“[T]he self interest of both contracting parties will induce them to seek out [terms] that represent[] the optimal tradeoff between expected cost of contractual governance and profits forgone because the ideal output . . . is not enforced perfectly.”); Robert E. Scott, *Conflict and Cooperation in Long-Term Contracts*, 75 CAL. L. REV. 2005, 2039–42 (1987) (explaining the nature and scope of self-enforcing agreements); Oliver E. Williamson, *Assessing Contract*, 1 J.L. ECON. & ORG. 177, 183 (1985) (“[C]ontract execution goes efficiently to completion because [some] promises . . . are . . . self-enforcing.”).

19. See, e.g., Lisa Bernstein, *Private Commercial Law in the Cotton Industry: Creating Cooperation Through Rules, Norms, and Institutions*, 99 MICH. L. REV. 1724, 1745–62 (2001) (describing the origin and significance of relationship-based remedies); Janet T. Landa, *A Theory of the Ethnically Homogeneous Middleman Group: An Institutional Alternative to Contract Law*, 10 J. LEGAL STUD. 349 (1981) (discussing the personalistic exchange relations arising in the absence of a developed legal framework); Barak D. Richman, *Firms, Courts, and Reputation Mechanisms: Towards a Positive Theory of Private Ordering*, 104 COLUM. L. REV. 2328 (2004) (describing the role of reputation-based private ordering).

tracts involve one-off transactions between relative strangers.²⁰ Another, more satisfying, explanation for the endurance of vague contracts is needed.

The thesis of this Article is that indefinite contracts are sometimes created because an imprecise term—combined with judicial willingness to fill gaps—can generate an embedded option.²¹ In other words, each party may think that the deal can be performed, at a minimum, by complying with the vague term in a manner favorable to the other side.²² But there is also a chance that one side will be able to secure his preferred interpretation of the vague term through persuasion or litigation—especially under the current trend toward a loose indefiniteness doctrine and greater judicial gap filling.²³ This possibility can be viewed as an embedded option, which the party may seek to exercise if future uncertainties play out in a particular way.

To see how the embedded option is created, consider a contract between two people for the sale of “chicken” that does not

20. Professor Scott’s empirical work, for example, revealed that two-thirds of the contracts struck down for indefiniteness involved one-time interactions between relative strangers. See Scott, *supra* note 8, at 1660 n.88. He suggests, however, that the domain of self-enforcing contracts may be greater than previously thought because parties may be motivated by a behavioral sense of reciprocal fairness. *Id.* at 1661–63.

21. An embedded option is an opportunity, but not an obligation, to act in the future as new information emerges related to outcomes that are uncertain today. Unlike financial options, embedded options are not detailed in a contract; they must be identified and specified. See JONATHAN MUN, REAL OPTION ANALYSIS: TOOLS AND TECHNIQUES FOR VALUING STRATEGIC INVESTMENTS AND DECISIONS 111–12 (2002) (describing various types of financial options); Timothy A. Luehrman, *Strategy as a Portfolio of Real Options*, HARV. BUS. REV., Sept.–Oct. 1998, at 89, 89–99. Embedded options are defined and discussed more fully *infra* Part II.A.

22. Professor Omri Ben-Shahar has recently suggested that courts should adopt an approach to the indefiniteness doctrine consistent with—but limited to—this belief. See Omri Ben-Shahar, “Agreeing to Disagree”: *Filling Gaps in Deliberately Incomplete Contracts*, 2004 WIS. L. REV. 389, 402–03. He argues that instead of taking an all-or-nothing approach to indefiniteness, courts should allow parties to enforce an indefinite contract so long as they are willing to accept terms favorable to the other side. *Id.* at 411–14. Courts would, however, not allow plaintiffs to have their preferred term govern the indefinite contract. This approach offers a possible solution to the problems explored in this Article, and I return to Professor Ben-Shahar’s intriguing suggestion *infra* Part III.B.

23. This Article thus builds on recent work by Professors Scott and Triantis suggesting that “much of contract design can be improved by anticipating carefully the effect of the course of litigation on contract terms.” Scott & Triantis, *supra* note 13, at 822.

specify the quality of fowl to be delivered.²⁴ The buyer plans to resell the birds but faces an uncertain demand. She may view this vague contract as conferring, at a minimum, the right to buy low-quality chicken. In addition, she enjoys an embedded call option—there is a chance that she can enforce the contract to get high-quality chicken.²⁵ And, importantly, she can decide whether to incur the costs of exercising the option after she gets new information on the poultry-market outlook.²⁶ There is measurable value to holding this option on high-quality chicken, which is a function of the length of the contract, the volatility of her chicken valuations, and several other factors.²⁷ Flipping the analysis, the seller may similarly view the contract as conveying the right to deliver high-quality chicken at the stated price, along with the possible option of enforcing the contract for low-quality chicken.

It is important to recognize that the price—or even the creation—of an embedded interpretive option may not be fully appreciated by both parties. When an indefinite contract is formed, the option seller (which, as will become apparent, could be either party to the contract)²⁸ is forced to write the option at a price that depends on characteristics of the option buyer.²⁹

24. This example draws upon the famous contract interpretation case of *Frigalment Importing Co. v. B.N.S. International Sales Corp.*, 190 F. Supp. 116, 121 (D.C.N.Y. 1960) (determining whether a contract to sell “chickens” referred to plump, young chickens or old, grizzled ones, *id.* at 120–21). The problem in that case differs from the one contemplated by this Article—how to interpret a valid contract, not whether to find one—but the facts serve as a nice example of how vagueness can create options.

25. Unlike a traditional call option, the buyer in this example does not have an absolute right to purchase high-quality chicken in the future. But if she pays the option exercise price—the cost of persuasion or litigation—then she does have a chance of securing high-quality chicken under the contract. So a better analogy might be an investor who purchases a call option that confers a chance of purchasing the underlying stock upon payment of the exercise price.

26. The entire analysis assumes, of course, that the contract takes place over time and is not an immediate spot transaction.

27. Five variables are typically used to calculate option value: the value of the underlying asset, the volatility of the underlying asset, the time to maturity, the risk-free interest rate, and the exercise price. MUN, *supra* note 21, at 149–50; *see also infra* note 111.

28. *See infra* Part II.B.

29. *Cf.* Bradford Cornell, *The Incentive to Sue: An Option-Pricing Approach*, 19 J. LEGAL STUD. 173, 175 (1990) (“When a lawsuit is filed, the defendant is forced to write litigation options at prices that depend on the plaintiff’s cost of pursuing the suit It is possible, therefore, that a defendant will be forced to write options whose value significantly exceeds the plaintiff’s

Although the option may arguably be considered an implicit deal between the parties to trade risk, in the real world the option seller may be unlikely to recognize the option or have the information necessary to price the option appropriately. As a result, some people who get an option through vague language likely get it for free—or at a bargain rate—even though it imposes real costs that the other party would not have accepted without an adjustment elsewhere in the contract terms.

Given these cognitive limitations, this Article will argue that embedded interpretive options can be problematic from an economic point of view.³⁰ For example, if the option value to a buyer is sufficiently large—and ignored or underpriced by the seller—then the seller may contract to sell too much of a good. In other words, the price that the seller “really” receives might fall below his cost to produce. Or, conversely, a buyer may ignore an embedded option garnered by a seller and purchase a product even though the price that the buyer “really” pays exceeds her valuation. Similarly, these options may lead to inefficient contract-related investments that do not fully take into account the likelihood of performance or the cost of breach. Aggressive gap filling and further erosion of the indefiniteness doctrine thus has an underexplored cost: it may lead to distortions that allocate resources inefficiently.

This Article develops the embedded options theory of indefinite contracts in three parts. Part I briefly reviews the indefiniteness problem, assesses existing theories for why indefinite contracts occur, and explores current solutions to the problem. Part II analyzes indefinite contract terms through the embedded options lens and looks at the impact of these options on efficient trade and investment decisions. Finally, Part III considers the implications of this theory for the law’s treatment of the indefiniteness doctrine. The Article argues that the right solution cannot embrace an overly formal approach that avoids plugging gaps entirely—all agreements retain some ambiguity. But recent zeal to fill gaps may be excessive, and a better ap-

purchase price.”).

30. Cf. Timothy J. Muris, *Opportunistic Behavior and the Law of Contracts*, 65 MINN. L. REV. 521, 527–28 (1981) (demonstrating that even noncontract law solutions cannot completely guard against opportunism); Posner, *supra* note 16, at 565 (discussing some strategies an opportunistic party might employ to take advantage of an indefinite contract).

proach might involve “pro-defendant gap fillers”³¹ which only permit parties to enforce indefinite contracts with terms favorable to the other side. Another plausible approach would focus directly on the underlying reason for indefiniteness and whether parties have made sufficient investments in contractual specificity. Unfortunately, the fact-specific nature of these inquiries means that a bright-line rule for indefiniteness is unlikely to be very helpful. A brief conclusion summarizes the Article’s claims.

I. THE INDEFINITENESS PROBLEM

Near the end of 1995, David Chase, a rising television producer, flew from Los Angeles to New Jersey to research mafia activity.³² He wanted to flesh out an idea for a television show centering around “a mob boss in therapy.” The concept would ultimately expand into the wildly successful HBO program *The Sopranos*.

Upon landing in New Jersey, Chase was ushered around by a man named Robert Baer, whom he had met earlier that year.³³ Baer, a former prosecutor now aspiring to make movies, introduced Chase to a number of police detectives and mafia aficionados.³⁴ Chase listened to their stories about criminal plotting and gang intrigue—some of which would later feature on episodes of *The Sopranos*.³⁵ They toured mob hang-outs in New Jersey to scout filming locations. And a bit later, Baer also read and commented on drafts of Chase’s scripts.³⁶

Chase repeatedly offered to compensate Baer for his help, stating bluntly “you help me; I pay you.”³⁷ But Baer would not accept any money up front, always countering that he would perform the services for free and take payment only if the show became a success.³⁸ Finally, they agreed verbally that if this happened, “Chase would ‘take care of’ Baer, and ‘remunerate

31. See Ben-Shahar, *supra* note 22, at 411–20.

32. Baer v. Chase, 392 F.3d 609, 613 (3d Cir. 2004); Baer v. Chase, No. CIV.A.02-CV-2334(JA, 2004 WL 350050, at *4 (D.N.J. Feb. 20, 2004).

33. Baer, 392 F.3d at 613.

34. *Id.*

35. *Id.* at 613 & n.1.

36. *Id.* at 613.

37. *Id.* at 614.

38. *Id.*

Baer in a manner commensurate to the true value of [his services].”³⁹ In actuality, Chase went on to make *The Sopranos* without further help from Baer, the show was a financial blockbuster, and Chase never paid Baer a dime.⁴⁰ Baer sued to enforce the alleged contract in federal court.

To Baer’s disappointment, however, both the District Court of New Jersey and the Third Circuit Court of Appeals rejected his claim that the verbal agreement created a binding contract.⁴¹ It was too indefinite. As the appeals court explained, “an agreement so deficient in the specification of its essential terms that the performance by each party cannot be ascertained with reasonable certainty is not a contract.”⁴² In this case, the agreement was too indefinite for at least four reasons: it did not set Baer’s compensation or provide a manner for determining his compensation;⁴³ it did not specify the meaning of the show’s “success”;⁴⁴ it did not state whether the reward would come in cash, a screenwriting job, or some other form;⁴⁵ and it did not contemplate commencement and termination dates.⁴⁶ Baer begged the courts to “plug gaps” and “clarify [the] ambiguities’ in the alleged contract,” but they refused to do so, and he lost the case.⁴⁷

As *Baer v. Chase* illustrates, the indefiniteness doctrine is a fundamental notion of contract law. There is a fatal problem when material terms are too indefinite, and the contract is void.⁴⁸ Or more accurately, there is no contract at all. According to the Restatement (Second) of Contracts, an offer “cannot be accepted so as to form a contract unless the terms of the con-

39. *Id.*

40. *Id.*

41. *Baer v. Chase*, No. CIV.A.02-CV-2334(JA), 2004 WL 350050, at *6–8 (D.N.J. Feb. 20, 2004), *aff’d* 392 F.3d 609.

42. *Baer*, 392 F.3d at 619 (quoting *Lo Bosco v. Kure Eng’g Ltd.*, 891 F. Supp. 1020, 1025 (D.N.J. 1995)).

43. *Baer*, 2004 WL 350050, at *6.

44. *Id.* at *7.

45. *Id.* For example, compensation under the agreement might come in the form of a screenwriting job for *The Sopranos* instead of dollars. *Id.*

46. *Id.*

47. *Id.* at *8. Baer might have recovered the fair value of his services under a quasi-contract theory, but the statute of limitations may have barred that claim. *Baer*, 392 F.3d at 621–26 (remanding the issue to the lower court).

48. See FARNSWORTH, *supra* note 2, § 3.27; MURRAY, *supra* note 2, § 38(A); PERILLO, *supra* note 2, § 2.9.

tract are reasonably certain.”⁴⁹ You cannot bargain to sell *something* for \$500 and expect a court to uphold this agreement as a real contract.

And the intuition behind this rule should be obvious. How can a court possibly know whether a breach has occurred when an agreement is exceptionally vague? While it is often possible to fill gaps with reasonable terms, this fiction can eventually go too far. As one judge put it, “There is a point . . . at which interpretation becomes alteration.”⁵⁰ Courts are reluctant to make contracts for parties or to introduce important terms that they omit.⁵¹

The problem, of course, is deciding whether a contract is too vague—such that it must be annulled—or whether it can be interpreted and affirmed by the court.⁵² Is an agreement to stitch a tailor-made suit for \$500 void because the parties do not specify the fabric?⁵³ A contract for a Chevy truck where the color and engine size are unspecified?⁵⁴ How about a deal to build “a first-class hotel” and operate it in a “first-class manner?”⁵⁵ Vagueness is a matter of degree. As we shall see, views on the correct scope of the indefiniteness doctrine have ebbed and flowed over the past century.⁵⁶ But first, to put the problem in perspective, it is helpful to examine why parties might write an indefinite contract.

49. RESTATEMENT (SECOND) OF CONTRACTS § 33(1) (1981).

50. *Mellon Bank N.A. v. Aetna Bus. Credit, Inc.*, 619 F.2d 1001, 1011 (3d Cir. 1980).

51. See RESTATEMENT (SECOND) OF CONTRACTS § 33(2), cmt. b; FARNSWORTH, *supra* note 2, § 3.28.

52. A different but closely related problem is whether vague expressions of assent between the parties lead to any agreement at all. This problem raises a number of important concerns related to precontractual obligation. See, e.g., Richard Craswell, *Offer, Acceptance, and Efficient Reliance*, 48 STAN. L. REV. 481 (1996); Avery Katz, *When Should an Offer Stick? The Economics of Promissory Estoppel in Preliminary Negotiations*, 105 YALE L.J. 1249 (1996). But the topic I focus on here is different: once a vague agreement has been formed, should it be enforced through judicial interpretation or voided under the indefiniteness doctrine?

53. See *Factor v. Peabody Tailoring Sys.*, 187 N.W. 984, 984–85 (Wis. 1922) (answering the question in the affirmative).

54. See *Paloukos v. Intermountain Chevrolet Co.*, 588 P.2d 939, 942 (Idaho 1978) (deeming the agreement legally binding).

55. See *Hart v. Ga. R.R. Co.*, 28 S.E. 637, 637–38 (Ga. 1897) (voiding the contract under the indefiniteness doctrine). Farnsworth offers plenty of other good examples. FARNSWORTH, *supra* note 2, § 3.28.

56. See *infra* Part I.B.

A. WHY PARTIES WRITE INDEFINITE CONTRACTS

1. Economize on Transaction Costs

One plausible reason why parties fail to contract with greater specificity is that forming an agreement is costly.⁵⁷ It may not be worth investing much time to spell out specific terms for routine transactions. And even when a contract involves a great deal of money or complexity, there will still be low-probability events that are not worth dickering over.⁵⁸ The parties may rationally choose not to address the contingency at all—silence being a form of indefiniteness—or they may decline to state specific terms and metrics if they do reference a remote event. In this sense, transaction costs ensure that all contracts are indefinite in the same way that all contracts are incomplete.

This presents a possible concern, however, because it suggests that parties can externalize the costs of contract formation to the courts.⁵⁹ Instead of taking the time and expense to describe what a “first-class hotel” looks like, for example, the parties may rely on a judge to fill in the blanks and reach a good-enough outcome if they cannot work it out themselves. Commentators have justifiably questioned whether courts should be forced to take on this task.⁶⁰ Why let private parties push contracting costs to a publicly funded judiciary? Smart judges have full dockets, and it might be better to adopt an expansive, or formal, use of the indefiniteness doctrine so the law forces parties to spell out what their contract means.⁶¹

57. See, e.g., COOTER & ULEN, *supra* note 16, at 211–17; Ayres & Gertner, *supra* note 1, at 92–93; Cohen, *supra* note 1, at 81.

58. See Schwartz & Scott, *supra* note 17, at 594–95.

59. The general notion that parties may inappropriately shift contracting costs to the judiciary dates back, at least, to Lon Fuller’s work on formalities in contract law. See Lon L. Fuller, *Consideration and Form*, 41 COLUM. L. REV. 799 (1941). More recent views on this topic can be found in Ayres & Gertner, *supra* note 1, at 123–27; Eric A. Posner, *There Are No Penalty Default Rules in Contract Law* 10, Univ. of Chi., John M. Olin Law & Econ. Working Paper No. 237 (2d Series), 2005, available at <http://ssrn.com/abstract=690403> (“[T]here is no doubt that in a simple economic model, the parties have an incentive to externalize their costs on courts. One way of doing so may be to leave gaps in their contracts in the expectation that courts will fill them properly in case there is a dispute.”).

60. E.g., Ayres & Gertner, *supra* note 1, at 123–27 (using the argument to justify penalty default rules that force parties to spell out contracts in more detail).

61. See, e.g., *id.* at 93 (suggesting that penalty defaults reduce adjudica-

On the other hand, this may not get us very far because parties surely cannot be expected to state *every* term with perfect precision. Remember that contingencies are often remote, language is clumsy, and time is short. So the interesting question, even for formalists, remains: when does a contract pass a threshold of indefiniteness that should preclude it from becoming a legally binding agreement?

In a recent article, Richard Posner takes on this question with economic rigor, suggesting that courts should sometimes enforce vague contracts to strike an efficient balance between *ex ante* negotiation and *ex post* litigation.⁶² Judge Posner states up front that the goal of a legal system should be “to minimize contractual transaction costs, broadly understood as obstacles to efforts voluntarily to shift resources to their most valuable use.”⁶³ A helpful way to look at the problem, then, might be to model the components that make up the transaction costs of contracting.

Judge Posner divides contracting costs into two stages.⁶⁴ Stage-one costs come when the initial contract is drafted, as the parties determine what the contract should say. Stage-two costs come when a vague or missing term leads to legal dispute, and the parties pursue adjudication. Judge Posner claims that rational parties will not spell out all contract terms in stage one—but will instead trade off stage-one formation costs against stage-two litigation costs.⁶⁵ The optimal specificity of a

tion costs); Posner, *supra* note 59, at 10; Schwartz & Scott, *supra* note 17, at 608 (“Default rules have proved too expensive for large heterogeneous economies.”). Eric Posner offers another straightforward approach: just charge parties more to use the courts in this manner. Posner, *supra* note 59, at 10.

62. Posner, *supra* note 15, at 1583–84.

63. *Id.* at 1583; *see also* COOTER & ULEN, *supra* note 16, at 214 (suggesting that a key “purpose of contract law is to minimize transaction costs of negotiating contracts by supplying efficient default terms and regulations”).

64. Posner, *supra* note 15, at 1583–84; *see also* Scott & Triantis, *supra* note 13, at 822–39. The literature actually hints at a third classification of contracting costs: investments that take place postformation, but prelitigation, as parties try to resolve the dispute themselves. This might include persuasion, threats, renegotiation, and the like. Posner, *supra* note 15, at 1614. As with previous work, however, I collapse the analysis of postformation behavior into just one step of persuasion and litigation. A more thorough analysis might examine the compound options that arise from indefinite terms: the option to invest in persuasion, the option to invest in litigation, and so on. The greater flexibility and piecemeal investment afforded by a compound analysis would increase the value of any embedded option. *See* Cornell, *supra* note 29, at 184–86.

65. Posner, *supra* note 15, at 1584.

contract is thus a function of several variables, including formation costs, the probability of litigation (itself a function of stage-one formation costs), the costs of litigation (to both the parties and the judiciary), and the cost of error (the possibility that the court will misinterpret the contract).⁶⁶

In short, Judge Posner's work suggests that parties will implicitly or explicitly weigh the gains from investing in specificity now against the possibility of sorting out disputes from vagueness later. The normative implication is that some vague contracts should be enforced; a formalist approach requiring that parties "do whatever is necessary" to avoid ambiguity is inefficient.⁶⁷ An extended argument might claim that courts should enforce vague contracts when, and only when, parties have made efficient tradeoffs between stage-one formation costs and stage-two litigation costs.⁶⁸

Yet empirical work by Robert Scott questions whether Judge Posner's theory accurately explains how parties approach contract formation.⁶⁹ In 2003, Professor Scott built and analyzed a database of all litigated cases involving the indefiniteness doctrine for a five-year period. Nearly two-thirds of the contracts were struck down for indefiniteness⁷⁰—and the parties often failed to write definite contracts even when it would have been easy to invest in greater specificity for material terms.⁷¹ Apparently, just a few of these cases resulted from in-

66. *Id.* at 1583–84.

67. Judge Posner puts it this way: "[T]he object of judicial enforcement of contracts is to minimize the sum of [stage-one formation and stage-two litigation] costs—rather than . . . insist that parties do whatever is necessary at the first stage to minimize the likelihood of litigation." *Id.* at 1584.

68. Judge Posner does not explicitly extend his argument to make this point, but it might be deemed a plausible implication of his work. *See id.* at 1583–84, 1587–89. I take up a form of this argument *infra* Part III.C.

69. Scott, *supra* note 8.

70. *Id.* at 1652–61. Professor Scott's methodology and results are described *supra* notes 9–12 and accompanying text. Interestingly, it appears that the distinction between valid and invalid contracts in the cases that Professor Scott analyzed did not depend on whether the U.C.C. was involved or whether the dispute arose in a pro-gap-filling state. Scott, *supra* note 8, at 1652–54. Rather, the outcome may have turned on whether the court believed that the parties fully exploited verifiable metrics that could have easily been brought into the contract. *Id.* at 1654–55. In other words, the normative claim that inefficiently low investment in specific terms at the formation stage should invalidate the contract may enjoy positive support in the case law.

71. Scott, *supra* note 8, at 1657.

advertence or carelessness; it seems that most of the parties deliberately chose to keep their contracts vague.⁷²

The real puzzle comes from Professor Scott's observation that "parties [often] failed to incorporate in their agreements readily available, verifiable measures of performance."⁷³ For example, one common fact pattern involves an employment contract where the parties fail to spell out a bonus term clearly. They might easily state a formula for determining the bonus—and the specific performance benchmarks required to earn the bonus—but fail to do so. Other deals studied by Professor Scott also seem to be kept deliberately vague,⁷⁴ and my analysis of more recent cases supports this finding.⁷⁵

Or to use Judge Posner's terminology, it seems that parties sometimes fail to make efficient investments in stage-one formation costs. Certainly some contracts are indefinite only because the transaction costs of writing detailed terms are not worth it. But the question remains: why do a subset of parties intentionally keep their contracts vague even when it is easy—and presumably efficient—to include a more precise term that would satisfy the indefiniteness doctrine?

72. *Id.*; see also Triantis, *supra* note 13, at 1067 ("The apparent willingness of commercial parties to agree to vague terms is puzzling.").

73. Scott, *supra* note 8, at 1657. This riddle is also reflected in the economic literature on optimal contract design. See, e.g., B. Douglas Bernheim & Michael D. Whinston, *Incomplete Contracts and Strategic Ambiguity*, 88 AM. ECON. REV. 902, 902 (1998) ("[O]ne also frequently observes contracts that seem 'excessively' incomplete . . . mak[ing] actions less sensitive to verifiable events than would seem optimal . . . [and] fail[ing] even to specify verifiable obligations of the parties.").

74. Scott, *supra* note 8, at 1657.

75. *Baer v. Chase*, 392 F.3d 609 (3d Cir. 2004), discussed *supra* notes 32–47 and accompanying text, is perhaps one example. Other illustrative cases where courts seize upon an apparently conscious failure to include verifiable metrics for material terms include *Imi Norgren, Inc. v. D & D Tooling Manufacturing, Inc.*, 306 F. Supp. 2d 796, 802 (N.D. Ill. 2004) (voiding a settlement agreement because the security term was too indefinite since "[a]ll that was agreed to was that the payment was to be secured in some fashion [but] [n]o other terms were spelled out"); *Botterbusch v. Preussag International Steel Corp.*, 609 S.E.2d 141, 148 (Ga. Ct. App. 2004) ("[A]lthough various parties discussed [plaintiff's] supplemental retirement package, no meeting of the minds was reached as to what this package would include."); *Goldstein v. Miles*, 859 A.2d 313, 329 (Md. Ct. Spec. App. 2004) (striking down an agreement to sell a law firm for "below market value" because it "did not contain any material terms of the sale such as purchase price, date of sale, interest rate, or terms of payment"). My research methodology and broader findings are discussed *infra* notes 105–07 and accompanying text, but again I caution the reader against overgeneralizing from these cases. See *supra* note 12.

2. Rely on Self-Enforcement

A second explanation for vague contracts in the face of the indefiniteness doctrine is that the parties do not really care whether courts will uphold the agreement. The contracts may be self-enforcing, such that the parties have extralegal incentives to work out disputes among themselves.⁷⁶ For example, if they expect to engage in many future transactions, then the gains from capsizing an immediate agreement may be outweighed by the loss from future deals.⁷⁷ Or the parties may do business in a tightly knit community where harm to one's reputation would be more painful than breach would be pleasant.⁷⁸ For these reasons, among others, parties may write indefinite contracts with impunity and rely on norms or other characteristics of their commercial relationship—instead of the legal system—for enforcement.

The literature on self-enforcing contracts and relational contracting is extensive, and I will not try to review it here.⁷⁹ But one point is worth raising: self-enforcing contracts are generally thought to represent just a small share of all agreements that are formed.⁸⁰ Most of the available evidence suggests that self-enforcing contracts spring up through homogeneity—occurring either in markets for homogeneous goods or in markets with homogeneous ethnic participants.⁸¹ In these situations, the damage to a breaching party from foregone future deals or bruised reputation is likely to be particularly acute, raising the incentives to work it out privately.

76. See Scott, *supra* note 18, at 2039–42; Williamson, *supra* note 18, at 183.

77. See DOUGLAS G. BAIRD ET AL., *GAME THEORY AND THE LAW* 159–87 (1994); COOTER & ULEN, *supra* note 16, at 225–35; Douglas G. Baird, *Self-Interest and Cooperation in Long-Term Contracts*, 19 J. LEGAL STUD. 583, 583–96 (1990); Goetz & Scott, *supra* note 18; L.G. Telser, *A Theory of Self-Enforcing Agreements*, 53 J. BUS. 27, 27–44 (1980).

78. See sources cited *supra* note 19.

79. For an excellent review of the literature, including a comprehensive bibliography, see Morten Hviid, *Long-Term Contracts and Relational Contracts*, in 1 ENCYCLOPEDIA OF LAW AND ECONOMICS, *supra* note 1, at 46, 46–72. A 1999 symposium in honor of Ian R. Macneil at the Northwestern University School of Law also celebrated relational contracting scholarship. Symposium, *Relational Contract Theory: Unanswered Questions*, 94 NW. U. L. REV. 735 (2000).

80. See Scott, *supra* note 8, at 1644, 1646 (“[I]t is generally assumed that many (if not most) contracts fall outside the self-enforcing range.”).

81. See Landa, *supra* note 19; Richman, *supra* note 19; Schwartz & Scott, *supra* note 17, at 557; Scott, *supra* note 8, at 1646 & n.18.

It is likely, therefore, that self-enforcement will explain just a subset of deliberately indefinite contracts.⁸² Is there another plausible explanation?⁸³

3. Avoid Deal Disruption Through Strategic Ambiguity

When parties sit down to negotiate a particularly contentious or complicated deal, one well-known strategy is to agree on the easy issues early and put off the difficult ones for later.⁸⁴ For example, merger negotiations between two large firms may reserve tough decisions—such as who will take over as CEO or who will control more board seats—for the very last. Or legislators may draft a bill in broad strokes and then resort to vague statutory language to bridge a final political chasm.⁸⁵ Why re-

82. It is worth asking, of course, whether the domain of self-enforcing contracts might be larger than previously thought. Robert Scott, for example, has argued that many contracts are self-enforcing because parties are motivated by a sense of reciprocal fairness. Scott, *supra* note 8, at 1661–72. Drawing upon experimental economics, he hints that nearly half of the total contracting population could be included in this group. *Id.* at 1662–63. Even if the scope of self-enforcing contracts is truly this large, however, there are reasons to focus on the proper role of the state in enforcing contracts. See, e.g., Schwartz & Scott, *supra* note 17, at 557–59.

83. Three additional possibilities, which I will not explore in detail in this Article, involve agency costs, bounded rationality, and signaling effects. See Bernheim & Whinston, *supra* note 73, at 902; Triantis, *supra* note 13, at 1067. Agency costs could theoretically lead to vague contracts if agents shirk their duties and fail to invest appropriately in specific terms for their principals. Triantis, *supra* note 13, at 1067. Bounded rationality might lead to vague contracts if the parties fail to distinguish certain contingencies, underestimate the likelihood of a particular contingency, or do not see a need to specify detailed performance metrics. See HERBERT A. SIMON, *THE SCIENCES OF THE ARTIFICIAL* 31–61 (1981); Bernheim & Whinston, *supra* note 73, at 902. These considerations are closely related to the ones I raise *infra* Part II.B.4. Robert Scott and George Triantis have recently offered a third explanation: that parties might intentionally introduce unverifiable, vague terms into a contract as a signaling mechanism. See Scott & Triantis, *supra* note 13, at 849–50; Triantis, *supra* note 13, at 1073–76. According to Triantis, “[P]arties might contract on factors that are not verifiable if there is a sufficiently significant difference in the cost of proving or rebutting a truthful versus a false representation of the state of the world.” Triantis, *supra* note 13, at 1076.

84. See, e.g., DAVID A. LAX & JAMES K. SEBENIUS, *THE MANAGER AS NEGOTIATOR* 88–116 (1986); Ben-Shahar, *supra* note 22, at 402–05.

85. Alan Schwartz and Robert Scott have argued, for example, that the drafters of recent revisions to Article 2 of the Uniform Commercial Code were inclined to use vague language in order to increase the likelihood that their amendments would be adopted. Alan Schwartz & Robert E. Scott, *The Political Economy of Private Legislatures*, 143 U. PA. L. REV. 595, 607–10 (1995); Robert E. Scott, *The Rise and Fall of Article 2*, 62 LA. L. REV. 1009, 1009–11 (2002).

tain this ambiguity? Wouldn't it be better to confront the hard issues first to figure out whether there is even a zone of agreement?

Maybe not. There can be strategic reasons to defer contentious matters.⁸⁶ Perhaps the parties want to gather momentum for the deal and cultivate a cordial working relationship. They may believe that the hard terms will be easier to work through once the easy terms are settled and the contract starts to take shape.⁸⁷ Or it may be that deferring a divisive issue may allow the parties to avoid dealing with it altogether. After all, some issues become less important or less contentious as time passes and events change.⁸⁸ By delaying confrontation, the parties can wait out some contingencies in the hope that they will sort themselves out.⁸⁹ In either case, the parties may fear that forcing resolution of a contentious term will shipwreck the deal, while skirting the issue—by employing strategic ambiguity—

86. See, e.g., ADAM M. BRANDENBURGER & BARRY J. NALEBUFF, CO-OPERATION 222–28 (1996) (discussing strategies to “stir up the fog” in business transactions); Bernheim & Whinston, *supra* note 73, at 902–04 (describing how purposefully indefinite contracts, even for verifiable terms, might increase joint surplus when other parts of the agreement are unverifiable); Birger Wernerfelt, *Incomplete Contracts and Renegotiation* (MIT Sloan Sch. of Mgmt., MIT Sloan Working Paper 4506–04, 2004), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=583742 (combining the transaction costs and strategic-ambiguity rationales to show how vague contracts, combined with a threat of renegotiation, can increase joint surplus).

87. Ben-Shahar, *supra* note 22, at 403 (“The parties may believe that the obstacles to agreement for some issues may subside after most of the transaction is determined, or that future negotiations may succeed where present negotiations failed.”).

88. To continue with the merger example, maybe one of the two possible CEOs will decide to retire, mooted the debate over who should lead the companies following the merger. For a high-profile example of this, see Tracie Rozhon & Andrew Ross Sorkin, *Federated Shows Renewed Interest in a Deal for Macy*, N.Y. TIMES, Jan. 21, 2005, at C1 (describing renewed merger talks and the subsequent agreement following the resignation of one firm’s CEO).

89. See Ben-Shahar, *supra* note 22, at 403 (“Parties may also set aside sticky issues in the hope that they might be able to sidestep them, as when the likelihood of a relevant contingency declines.”); Gillian K. Hadfield, *Weighing the Value of Vagueness: An Economic Perspective on Precision in the Law*, 82 CAL. L. REV. 541, 547 (1994) (“[U]ncertainty about the future makes it advisable for contracting parties to defer negotiation on some aspects of their relationship until more is known about the shape of future events.”); William C. Whitford, *Relational Contracts and the New Formalism*, 2004 WIS. L. REV. 631, 636 (“If the parties can delay a decision, then it may be clear that a contingency will not happen, or a key individual may retire or be reassigned.”).

can preserve the contract, or possibly even increase joint surplus.⁹⁰

To use *Baer v. Chase* as an illustration,⁹¹ Robert Baer might have easily stated his price to guide David Chase through the back alleys of Newark and edit his *Sopranos* manuscripts—along with the conditions under which Baer would receive payment. For example, he could have offered his services for perhaps five percent of the show's profits, payable only if earnings exceeded \$10 million.

So why didn't he? Baer might have left the arrangement vague because it was costly to hash through an agreement or because he thought that the contract would be self-enforcing. But these explanations are not very satisfying. It would not take long to negotiate a few important, specific, and presumably verifiable, terms. And Baer and Chase were relative strangers living on opposite coasts, not colleagues with a long working relationship.⁹²

Instead, I think strategic ambiguity is a much more likely explanation for the vagueness of their agreement. Baer was probably afraid that if he pushed the issue of price—demanding the large share of profits that he truly hoped to get—then Chase would balk at paying this much for his services and figure out another way to navigate New Jersey's mafia dens. And similarly, Chase may have feared that if he insisted on nailing down the terms of the deal, this would reveal his unwillingness to pay Baer very much, causing Chase to lose a convenient guide. Both parties found it better to make a vague agreement, expecting that either a key contingency would never arrive (for example, this project would never go anywhere) or that they would work out the right price—"right" meaning different things to each of them—later.

As we shall see, this strategic ambiguity is partially responsible for creating an embedded option latent in some vague contracts. But it is only half of the story. The parties must also believe that the contract might be legally enforced notwithstanding the indefiniteness doctrine. To see why they may hold this belief, it is important to briefly consider how the law's approach to indefinite contracts has changed over time.

90. See Bernheim & Whinston, *supra* note 73, at 903–04; Wernerfelt, *supra* note 86, at 3.

91. See *supra* notes 32–47 and accompanying text.

92. *Baer v. Chase*, 392 F.3d 609, 612–13 (3d Cir. 2004).

B. HISTORICAL SOLUTIONS TO INDEFINITE CONTRACTS

1. Quash the Contract

The traditional common law held that sufficiently indefinite contracts were void.⁹³ If an agreement failed to include a critical term, then courts were obligated to strike down the agreement under the premise that the parties had not really sought to be bound. And the indefiniteness doctrine was often far-reaching, extending to situations where parties kept silent on key terms, where they adopted vague language, or where they just formed an agreement to agree.⁹⁴

Even at common law, however, there were some exceptions to this formal use of the indefiniteness doctrine, especially if the contract involved goods. In certain, limited circumstances, a court might be willing to fill a gap—even an important gap like price—if there was an objective way to do so and if it seemed that the parties really intended to form a binding agreement.⁹⁵ But apart from these limited exceptions, indefinite agreements were quashed under common law.

2. Fill the Gap

The middle decades of the twentieth century, however, brought a sense that a strict definiteness requirement—along with other formalities in contract law—should be eased.⁹⁶ The Uniform Commercial Code codified this sentiment with section 2-204, which states, “Even if one or more terms are left open, a contract for sale does not fail for indefiniteness if the parties have intended to make a contract and there is a reasonably certain basis for giving an appropriate remedy.”⁹⁷ In other words, courts should be willing to fill gaps by looking directly to the question of contractual intent and avoid using the degree of

93. See FARNSWORTH, *supra* note 2, § 3.27; MURRAY, *supra* note 2, § 38; PERILLO, *supra* note 2, § 2.9; Scott, *supra* note 8, at 1647–49; Nellie Eunsoo Choi, Note, *Contracts with Open or Missing Terms Under the Uniform Commercial Code and the Common Law: A Proposal for Unification*, 103 COLUM. L. REV. 50, 53–54, 56–58 (2003).

94. PERILLO, *supra* note 2, § 2.9; Scott, *supra* note 8, at 1648.

95. Scott, *supra* note 8, at 1648–49; Choi, *supra* note 93, at 54. In one case, for example, a court was willing to insert a missing price term in an automobile sales contract because the dealer sold cars for a fixed price and there was sufficient evidence of contractual intent. *McIlmoil v. Frawley Motor Co.*, 213 P. 971, 974 (Cal. 1923).

96. Scott, *supra* note 8, at 1649–52; Choi, *supra* note 93, at 54–55.

97. U.C.C. § 2-204(3) (2004).

completeness as a proxy for intent to be bound.⁹⁸

While it may seem that the U.C.C. broke little new ground—since exceptions for indefinite contracts had been made in the past—the approach was, in fact, different. There was now a much stronger sense that gaps should be filled whenever possible.⁹⁹ Courts began to claim that the indefiniteness doctrine was “against the policy of the law,” or that “striking down a contract for uncertainty [was] disfavored.”¹⁰⁰ Arthur Corbin summed up the philosophy succinctly: “the court should not frustrate [the parties’] intention if it is possible to reach a fair and just result, even though this requires a choice among conflicting meanings and the filling of some gaps that the parties have left.”¹⁰¹ A presumption towards gap filling emerged, one that has been echoed favorably by the Restatement¹⁰² and scholarly commentary.¹⁰³

3. Take an Intermediate Solution

Yet for all this eagerness to throw out the indefiniteness doctrine, courts have not obliged.¹⁰⁴ In fact, if anything, judicial

98. See Ben-Shahar, *supra* note 22, at 394; Scott, *supra* note 8, at 1649–52.

99. Scott, *supra* note 8, at 1650–51. This sentiment can be found throughout the Uniform Commercial Code *E.g.*, U.C.C. § 2-311(1) (2004) (“An agreement for sale which is otherwise sufficiently definite . . . to be a contract is not made invalid by the fact that it leaves particulars of performance to be specified by one of the parties.”).

100. *E.g.*, *N. Crossarm Co. v. Chem. Specialties, Inc.*, 318 F. Supp. 2d 752, 760 (W.D. Wis. 2004) (“Striking down a contract for uncertainty is disfavored. Courts are empowered to supply a deficient term when the parties’ intent can be determined from the surrounding circumstances.”); *Jones v. Hill*, 539 S.E.2d 893, 895 (Ga. Ct. App. 2000) (“[T]he policy of the law is against the destruction of contracts on the ground of uncertainty if it is possible in light of the circumstances under which the contract was made to determine the reasonable intention of the parties.”).

101. CORBIN, *supra* note 7, § 4.1, at 533. Corbin went on to argue that this is true because the law “must take language as it is and people as they are.” *Id.* at 530.

102. RESTATEMENT (SECOND) OF CONTRACTS § 33 (1981).

103. See Gergen, *supra* note 6, at 1062 (supporting “the now (happily) discredited doctrine that courts ought not enforce indefinite contracts”); Scott, *supra* note 8, at 1651 (“The contemporary presumption toward filling gaps in incomplete contracts has led commentators to assume that the common law indefiniteness doctrine is no longer a serious impediment to legal enforcement.”); Choi, *supra* note 93, at 50 (“[C]ourts should apply the U.C.C. analysis to both sale-of-goods and service contracts.”). On the more general point that contractual gap filling is desirable, see sources cited *supra* note 6.

104. Scott, *supra* note 8, at 1652–53.

encounters with the indefiniteness doctrine may be increasing.¹⁰⁵ In 2003 and 2004 alone, parties litigated 118 new cases involving indefiniteness.¹⁰⁶ Courts also appear to be annulling contracts under the doctrine with roughly the same frequency.¹⁰⁷ So why do courts refuse to plug the gaps? And what theory are they using when deciding whether to annul for indefiniteness?

It is hard to say. Courts have apparently decided to implement an intermediate solution, striking down some ambiguous agreements and upholding others according to individual circumstances of the case. And unfortunately, it is difficult to formulate a hypothesis that explains why courts are coming out the way they do.¹⁰⁸ The results do not appear to depend on whether a contract is for goods or services, whether the litigation takes place in a state that continues to prefer the common

105. The annual number of reported cases involving the indefiniteness doctrine since 2000 are as follows:

Year	Cases
2005	76
2004	53
2003	65
2002	63
2001	53
2000	48

To determine these figures, I searched Westlaw's 95k9(1) database "Contracts: Requisites and Validity: Nature and Essentials in General: Certainty as to Subject Matter: In General." I included all state and federal courts in the search. Of course these statistics do not indicate the total number of litigated cases, so it is impossible to tell if any increase is merely driven by an expanding caseload. Search of WESTLAW (Apr. 21, 2006).

106. See *supra* note 105.

107. A research assistant and I analyzed all 53 cases involving indefiniteness during the year 2004. We found that 11 of the cases only touched on the doctrine peripherally. Cf. Scott, *supra* note 8, at 1652–53 (discussing a similar study of cases between 1998 and 2002). Courts invalidated the agreements for indefiniteness in 19 of the remaining cases, or at a rate of roughly 45 percent. While this analysis suggests that Professor Scott's findings extend past the five-year period of his study, it is difficult to draw further conclusions due to selection biases.

108. See Scott, *supra* note 8, at 1653–55. To take one of many pairs of cases with similar facts but different results, compare *Imi Norgren, Inc. v. D & D Tooling Manufacturing, Inc.*, 306 F. Supp. 2d 796, 802 (N.D. Ill. 2004) (annulling a settlement agreement for indefiniteness where the parties agreed that payment would be secured but did not specify the precise security measures), with *Elite Show Services, Inc. v. Staffpro, Inc.*, 14 Cal. Rptr. 3d 184, 188–89 (Cal. Ct. App. 2004) (upholding a settlement agreement notwithstanding an indefinite term that provided payment of "reasonable attorney fees").

law approach to indefiniteness, or any other obvious factor.¹⁰⁹

We have arrived, then, at an intermediate solution where some indefinite contracts are enforced while others are annulled. And it can be difficult to predict in advance which way a court will rule. It is just this legal uncertainty—combined with the strategic ambiguity rationale for forming vague contracts described earlier¹¹⁰—that can give rise to an embedded option.

II. UNDERSTANDING INDEFINITE CONTRACTS AS EMBEDDED OPTIONS

Option theory has played a major role in economic, finance, and management research for the past several decades.¹¹¹ It is now used routinely in the formation of business strategy,¹¹² and techniques for valuing and managing embedded options abound.¹¹³ But the work has only just started to generate robust insights in the legal literature. Recent analysis explores how option theory can help legal scholars rethink problems related to tort, property, procedure, bankruptcy, securities regulation, and other areas of the law.¹¹⁴ And option theory is par-

109. Scott, *supra* note 8, at 1653–55. According to Professor Scott, courts might be “focus[ing] on whether the parties have fully exploited verifiable information in concluding their agreements.” *Id.* at 1654–55. This important point is discussed *infra* Part III.C.

110. See *supra* Part I.A.3.

111. The modern era for options scholarship dates to the early 1970s, when Merton, Black, and Scholes developed path-breaking methods for measuring the value of options. Fischer Black & Myron Scholes, *The Pricing of Options and Corporate Liabilities*, 81 J. POL. ECON. 637 (1973); Robert C. Merton, *Theory of Rational Option Pricing*, 4 BELL J. ECON. 141 (1973). Broader discussions of option applications can be found in RICHARD A. BREALY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 583–644 (6th ed. 2000) and JOHN C. HULL, *FUNDAMENTALS OF FUTURES AND OPTIONS MARKETS* 263–85 (5th ed. 2005).

112. See Tom Copeland & Peter Tufano, *A Real-World Way to Manage Real Options*, HARV. BUS. REV., Mar. 2004, at 90, 90 (reporting that a 2001 survey revealed that twenty-seven percent of CFOs “always or almost always” used option theory to guide business decisions).

113. *E.g.*, MUN, *supra* note 21; LENOS TRIGEORGIS, *REAL OPTIONS: MANAGERIAL FLEXIBILITY AND STRATEGY IN RESOURCE ALLOCATION* (1996); Thomas E. Copeland & Philip T. Keenan, *How Much Is Flexibility Worth?*, MCKINSEY Q., 1998 no. 2, at 38; Timothy A. Luehrman, *Investment Opportunities as Real Options: Getting Started on the Numbers*, HARV. BUS. REV., July–Aug. 1998, at 51.

114. See, *e.g.*, IAN AYRES, *OPTIONAL LAW: THE STRUCTURE OF LEGAL ENTITLEMENTS* (2005) (discussing how laws create options in a wide variety of contexts); Lee Anne Fennell, *Revealing Options*, 118 HARV. L. REV. 1401 (2005) (using an embedded option theory to offer a middle-ground solution to the li-

ticularly well-suited to the analysis of contract law, as both fields wrestle with problems related to exchange, valuation, and uncertainty. A number of insightful articles have made this connection.¹¹⁵

This Part adds to the discussion by showing how contractual ambiguity can, under the right circumstances, give rise to an embedded interpretive option. It then goes on to argue that parties may not fully appreciate the creation or cost of these options. This means that embedded options may sometimes distort efficient trade and investment decisions. But first, it is necessary to briefly lay out what embedded options are, and how they arise.

A. WHAT ARE EMBEDDED OPTIONS?

Many people are familiar with explicit options. For example, I might pay \$5 down to secure the right to purchase a given share of stock during a three-month period for \$100. Explicit options thus confer a right—but not an obligation—to buy or sell a good at a stated price for a given period of time.¹¹⁶ This privilege often, but not always, comes with a price tag,¹¹⁷ and its ultimate value to the buyer will vary with the value of the underlying good.¹¹⁸ An option can also be combined with an-

ability-entitlement problem in tort and property law); Peter H. Huang, *Corporate Finance: Teaching Corporate Law From an Option Perspective*, 34 GA. L. REV. 571 (2000) (applying option analysis to several legal contexts); Peter H. Huang, *Lawsuit Abandonment Options in Possibly Frivolous Litigation Games*, 23 REV. LITIG. 47 (2004); Mark Klock, *Financial Options, Real Options, and Legal Options: Opting to Exploit Ourselves and What We Can Do About It*, 55 ALA. L. REV. 63 (2004) (discussing option pricing and the creation of options through bankruptcy, litigation, contract law, and tort law); James C. Spindler, *IPO Liability and Entrepreneurial Response*, Univ. of Chi., John M. Olin Law & Econ. Working Paper No. 243 (2d Series), 2005, available at <http://ssrn.com/abstract=719768> (discussing how embedded put options that arise in the IPO context distort manager incentives).

115. See, e.g., Avery Wiener Katz, *The Option Element in Contracting*, 90 VA. L. REV. 2187 (2004); Paul G. Mahoney, *Contract Remedies and Options Pricing*, 24 J. LEGAL STUD. 139 (1995); Robert E. Scott & George G. Triantis, *Embedded Options and the Case Against Compensation in Contract Law*, 104 COLUM. L. REV. 1428 (2004). Much of this work explores how options are created by contract remedies; this Article shifts the focus to options arising from contract interpretation.

116. TRIGEORGIS, *supra* note 113, at 69.

117. Katz, *supra* note 115, at 2188, 2234–36.

118. BREALEY & MYERS, *supra* note 111, at 596–601. Continuing the example in the text, if the stock price rises to \$200, the net profit from the call option will be \$95 (\$200 – \$100 – \$5). If the stock price drops to \$50, then the option expires out of the money.

other derivative, or with economic positions in the underlying good, to craft precise risks.¹¹⁹

An embedded option, by contrast, is created implicitly when valuable opportunities—but again, not obligations—to take action in the future arise from outcomes that are uncertain today.¹²⁰ The option might be generated by a capital-asset purchase or other strategic investment. A decision to locate a factory in China, for example, may not make financial sense in its own right but could open up wonderful opportunities in the future—doors that will never appear unless this first step is taken.¹²¹ Or an embedded option might be created through a legal entitlement, such as the right to sue and invest in discovery¹²² or the right to breach a contract and pay damages.¹²³

It is important to note that while options emanate from uncertainty, not all uncertainty gives rise to an embedded option. The key requirement is that some of the uncertainty will be alleviated before the need to make a subsequent decision arises.¹²⁴ For example, our manager may not know whether his Chinese factory will be profitable—and accordingly, he develops best case and worst case financial projections. If he must pay the entire purchase price up front and then just wait to see how the project unfolds, no option is created. The die has already been cast, and the manager has no way to adjust his construction decisions as the fog of uncertainty lifts.

The ability to take action with new information, however, can create an embedded option. For instance, if the factory manager need not build the entire project according to a predestined plan, there may be options to abandon or delay completion. Or there may be an expansion option if Chinese connections could lead to a lucrative new market for his products—

119. For example, a put option might be combined with a share of stock to insure against downside losses, while preserving most of the gains from upside price appreciation. *Id.* at 589–96; HULL, *supra* note 111, at 225–42.

120. See TRIGEORGIS, *supra* note 113, at 69.

121. This example is an expansion option (the flexibility to choose among several growth strategies). Other embedded options include compound options (which are nested in another embedded option), switching options (the right and ability to switch to a different set of operating conditions), and abandonment options (the right to halt investment). MUN, *supra* note 21, at 13–20.

122. Cornell, *supra* note 29, at 173.

123. Scott & Triantis, *supra* note 115, at 1428; Alexander J. Triantis & George G. Triantis, *Timing Problems in Contract Breach Decisions*, 41 J.L. & ECON. 163, 163–65 (1998).

124. Luehrman, *supra* note 21, 89–90.

even though the expansion would require substantial costs to develop. Good news brings new, but worthwhile, expenditures, while bad news saves him from spending. So embedded options come when uncertainty is resolved through the passing of time and there are opportunities to make mid-course changes that incorporate this new information.

As a final illustration, consider the game of blackjack. A player places a bet, is dealt two cards, and observes one of the dealer's two cards. The player then draws additional cards to beat the dealer—by coming as close as possible to the sum of 21 without going over. Normally, players are not allowed to increase their bet after the cards are dealt; it would be advantageous, for example, to get more money on the table if the dealer turns up a bad card for his hand. But players can often “double down,” or double their bets in exchange for just one more card. This right—but not obligation—to double down might be considered an embedded option. A player can make the investment in a greater wager after receiving information about the dealer's hand.¹²⁵ And he need not increase his bet if, for example, the dealer shows an ace.¹²⁶

But embedded options are not just relegated to business investments and gambling. The structuring of a legal entitlement might also create an option.¹²⁷ As the next section begins to argue, embedded interpretive options can sometimes arise with indefinite contracts.

B. CREATING EMBEDDED OPTIONS WITH INDEFINITE CONTRACTS

The creation of embedded options with indefinite contracts is best illustrated through a series of examples. So, consider the plight of a soybean farmer in early April who faces an arduous six-month growing season. He needs to plant the fields in May and June, monitor weather and pest information through the summer months, and harvest and sell the crops from September through October.

By forming a contract with a buyer on April 1 for a specific price six months later, say \$10 per bushel, it is common sense

125. The exercise price comes from the cost of the additional bet, along with the fact that players are limited to drawing one additional card.

126. There are other embedded options in the game as well, such as the right to split hands when the player is dealt a matching pair.

127. See AYRES, *supra* note 114, at 3–6; Fennell *supra* note 114, at 1413–14.

that the farmer can shift the risk of price fluctuations during this time period to the buyer.¹²⁸ If the market price drops below \$10, the farmer can rest easy—even though he must also forego price gains above that mark. He might also rely on the contract to make relation-specific investments in the crops that increase the overall benefits of trade.¹²⁹

A complete contract between the farmer and buyer would specify every possible contingency—drought, fuel-price spikes, soybean rust, new seed varieties, and so on—and the resulting impact on the agreement if each event should occur. But we know that complete contracts are fiction; there will always be some ambiguity, or indefiniteness, left in the agreement.¹³⁰ Consider how these contractual ambiguities can sometimes lead to embedded options.

1. Output and Requirements Contracts

Start with a familiar ambiguity. Suppose the parties decline to specify the quantity of soybean bushels governed by the contract, but decide instead to leave the term open and create an output contract.¹³¹ The farmer commits to sell—and the buyer agrees to take—all the soybeans grown on his land during this season for \$10 per bushel.

This output contract presents a clear example of an embedded option.¹³² The seller has flexibility to produce and sell more or less goods as new information or other events impact his cost and profitability. This option may be limited by law,

128. See Craswell, *supra* note 52, at 488–89; A. Mitchell Polinsky, *Risk Sharing Through Breach of Contract Remedies*, 12 J. LEGAL STUD. 427, 427 (1983). For a classic case along these lines, see *Bolin Farms v. American Cotton Shippers Ass'n*, 370 F. Supp. 1353 (W.D. La. 1974).

129. Craswell, *supra* note 52, at 489–95; Schwartz & Scott, *supra* note 17, at 559–62. For example, the farmer may be willing to build a storage facility that uniquely benefits the buyer. Worthwhile investments that can be redeployed to other uses—for example, investments in pesticides or weather-related information that boost the overall crop yield—will usually make sense even in the absence of a contract. *Id.*

130. See *supra* note 17 and accompanying text.

131. An output contract arises when a seller agrees to sell and a buyer agrees to take all goods produced during a certain time period. FARNSWORTH, *supra* note 2, § 2.15. Commentators seem to agree that output and requirements contracts are useful ways to shift risk and should be deemed valid. See, e.g., John C. Weistart, *Requirements and Output Contracts: Quantity Variations Under the UCC*, 1973 DUKE L.J. 599, 607–22 (1973).

132. See Victor P. Goldberg, *Discretion in Long-Term Open Quantity Contracts: Reigning in Good-Faith*, 35 U.C. DAVIS L. REV. 319, 324 (2002); Katz, *supra* note 115, at 2230–34; Scott & Triantis, *supra* note 115, at 1429, 1454.

however, because extremely unreasonable swings in quantity are disallowed under the doctrine of good faith¹³³ or the U.C.C.¹³⁴ Nevertheless, there is still real value to this flexibility.¹³⁵ In effect, the farmer is bound to sell a minimum volume of goods in good faith, while also enjoying a qualified put option conferring the right to sell more bushels for \$10—which he will exercise if key uncertainties are resolved in a favorable manner.¹³⁶

A requirements contract, where the buyer agrees to purchase as much as business “requires,” raises very similar issues. The buyer now enjoys a right, but not an obligation, to purchase more goods if she needs them. In essence, the buyer receives a qualified call option—qualified, again, in the sense that it cannot, in good faith, fall below some lower limit or above some upper limit¹³⁷—to buy more goods at the same price for the duration of the contract. The seller thus bears the risk that buyer demand will be greater or smaller than expected.¹³⁸

And while output and requirements contracts might conceivably be struck down for indefiniteness—they do not, after all, specify a quantity—courts have been willing to let them stand.¹³⁹ Perhaps this is because these contracts are thought to

133. *E.g.*, *Feld v. Henry S. Levy & Sons, Inc.*, 335 N.E.2d 320, 323 (N.Y. 1975) (requiring seller to make bread crumbs under an output contract rather than merely sell crumbs if it did make them). Victor Goldberg offers extended discussion of this issue. Goldberg, *supra* note 132.

134. Article 2 of the Uniform Commercial Code codifies the good-faith limitation on extreme quantities under output and requirements contracts. U.C.C. § 2-306(1) (2004).

135. Katz, *supra* note 115, at 2230–43.

136. Qualified, again, in the sense that extreme changes in the quantity delivered or demanded under these contracts may violate the duty of good faith in contract performance.

137. *E.g.*, *Empire Gas Corp. v. Am. Bakeries Co.*, 840 F.2d 1333, 1335, 1340–41 (7th Cir.1988) (deeming a buyer’s decision bad faith when it reduced purchases to zero under a contract to buy “approximately three thousand . . . units, more or less, depending upon requirements”); *see also* Goldberg, *supra* note 132 (discussing courts’ use of good faith in interpretation of open quantity contracts).

138. For an explanation of why the seller might be willing to do this see Katz, *supra* note 115, at 2217–26.

139. U.C.C. § 2-306 cmt. 2 (“Under this Article, a contract for output or requirements is not too indefinite since it is held to mean the actual good-faith output or requirements of the particular party.”); FARNSWORTH, *supra* note 2, § 2.15. Representative cases applying the indefiniteness doctrine to these types of contracts include *Gestetner Corp. v. Case Equipment Corp.*, 815 F.2d 806, 811 (1st Cir. 1987) (“[S]ince the evidence demonstrated that both parties intended a requirements contract based on the buyer’s good-faith needs, ‘the

represent a conscious transfer of risk between the two parties. Or perhaps it is because judges or juries have a principled way to determine, at the end of the day, whether a breach occurred. How many bushels did the farmer grow that season? Or how many soybeans did the buyer need to conduct her business?

A court's approach will likely be different, of course, if the output or requirements contract is replaced by an agreement that remains absolutely silent in terms of quantity. For example, a deal where the farmer agrees to "sell soybeans for \$10 per bushel," without stating anything further, raises a more troubling ambiguity. Without anything else—such as a clear pattern of industry custom or historical dealing between the parties—courts will not plug the gap.¹⁴⁰ This means that no option is formed because neither the buyer nor the seller enjoys the flexibility to alter the quantity of goods upon request.¹⁴¹ The contract is void.

So, importantly, the creation of an embedded option in this context depends on the willingness of courts to resolve ambiguities and uphold contracts—at least some of the time. And while courts may be unwilling to enforce contracts with unstated quantity terms, they will often plug gaps for many other terms related to price, delivery, unexpected contingencies, and so on.¹⁴² This willingness to award a legal entitlement from contractual ambiguity can give rise to another type of embedded option.

2. Vagueness + Information + Judicial Gap Filling = Embedded Option

Suppose there is a different ambiguity in the soybean sales

indefiniteness of the written quantity term does not invalidate the agreement." O.N. Jonas Co., Inc. v. Badische Corp., 706 F.2d 1161, 1165 (11th Cir. 1983)) and *G.B. "Boots" Smith Corp. v. Cobb*, 860 So. 2d 774, 777 (Miss. 2003) ("Requirements contracts are recognized in Mississippi and are not void for indefiniteness.").

140. See PERILLO, *supra* note 2, §2.9, at 56 ("[W]here the parties have omitted from their agreement the . . . quantity of goods . . . the courts have refused to fill the gap because no objective standard can ordinarily be found in such cases.").

141. However, economic distortions may still occur if either side continues to perceive a chance of enforcing the contract at law. See *infra* Part II.B.2.

142. See *supra* notes 96–103 and accompanying text. The U.C.C. provides, of course, a wide range of contractual gap fillers. *E.g.*, U.C.C. § 2-305 (2004) (price); U.C.C. § 2-307 (2004) (apportioned delivery); U.C.C. § 2-308 (2004) (place of delivery); U.C.C. § 2-309 (2004) (time of delivery); U.C.C. § 2-310 (2004) (time of payment).

contract. The parties have now set a quantity of bushels, but the agreement does not describe the exact type of crops to be delivered. More specifically, imagine there are two different strains of soybeans—say strain 1 and strain 2.¹⁴³ Both strains are grown by the farmer, used by the buyer, and commonly sold in the marketplace, so it will be difficult to determine exactly which type the parties meant. Under this contract, then, the term “soybean” might be considered indefinite. The failure to use a precise description, combined with a belief that the gap might be filled under law, can produce another, more subtle, embedded option for each party.

a. Buyer Options

Let’s model the situation from the buyer’s point of view. Suppose she plans to process and resell the soybeans in six months’ time.¹⁴⁴ Her profits from either strain of soybeans will depend, in large part, on how other farms fare across the United States. Strain 1 soybeans are grown mostly in the Heartland—a fertile farm region in the Midwest—and if the crops flourish there this season, the buyer’s strain 1 resale price will suffer.¹⁴⁵ Strain 2 soybeans come primarily from the Mississippi Portal region (mostly Arkansas, Mississippi, and Louisiana), and prices will, again, depend on the success of farms there. Both regions face independent weather conditions, and the seller is assumed to be in a different part of the country, and thus unaffected by the news.

At the time of contracting, the buyer has only estimates for the probability of good news or bad news for each market and the resulting impact on profitability. Three months into the contract, however, new information on weather and likely yield for these two farm regions will emerge, giving the buyer a clearer understanding of her profits for both strains of soybeans. And shortly after the state of nature is revealed, the seller will announce his delivery intentions—whether he plans to deliver strain 1 or strain 2 crops. At this point, the buyer can

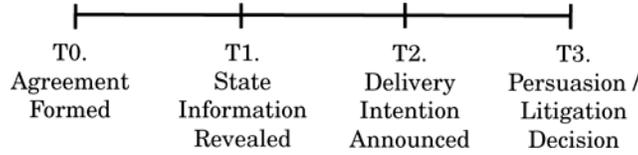
143. While different types of soybean strains are grown across the United States, the example here is merely hypothetical.

144. Processing and marketing costs are assumed to be the same for both strains of soybeans and are excluded to simplify the discussion.

145. The example is adapted from actual market conditions. See Linda Foreman & Janet Livezey, *Characteristics and Production Costs of U.S. Soybean Farms*, USDA STATISTICAL BULLETIN NO. 974-4 (2002), available at <http://www.ers.usda.gov/publications/sb974-4/sb974-4.pdf>.

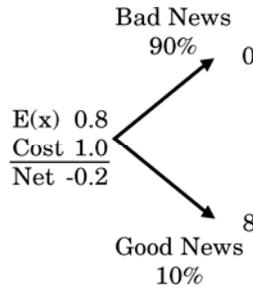
decide whether to accept or contest the seller’s decision (Figure 1 illustrates the contracting timeline).

Figure 1. Contracting Timeline



First, let’s ask whether the buyer will contract with definiteness for either strain of soybeans. Figure 2 puts some simple numbers to this example: suppose at the time of contracting, the buyer believes that strain 1 crops will face bad news 90 percent of the time and good news just 10 percent of the time.¹⁴⁶ She can resell her processed soybeans for only \$10 per bushel with bad news, thus making no profit after the \$10 contract price is deducted. But her payoff jumps to \$8 per bushel if good news occurs. Contracting costs in all cases are assumed to be \$1 per bushel, and this works out to an expected loss for strain 1 crops of \$0.20 per bushel.¹⁴⁷ Under these conditions, then, the buyer will not contract with specificity for strain 1 soybeans.

Figure 2. Payoff to Buyer from Definite Contract—Strain 1

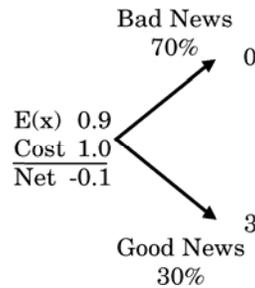


146. Again, bad news in this context means that the Heartland farms do well and strain 1 soybeans are in great supply—pushing down the resale prices and profitability for the buyer (demand effects during this time period are ignored). Good news means that Heartland farms face poor growing conditions, decreasing supply and increasing the price of strain 1.

147. The expected value is calculated as follows: [(probability of bad news) * (profits with bad news)] + [(probability of good news) * (profits with good news)] – transaction costs to contract = [(0.9) * (\$0)] + [(0.1) * (\$8)] – \$1 = – \$0.20. The time value of money is excluded from all calculations in this section to simplify the analysis.

As Figure 3 illustrates, the analysis is similar for strain 2 soybeans. The chance of good news is assumed to be a little higher, at 30 percent, but the upside profit from good news is now only \$3. As before, bad news leads to zero profits, and when the \$1 cost of contracting is subtracted, the buyer expects to lose \$0.10 per bushel. She will again refuse to contract with specificity for strain 2 crops.¹⁴⁸

Figure 3. Payoff to Buyer from Definite Contract—Strain 2



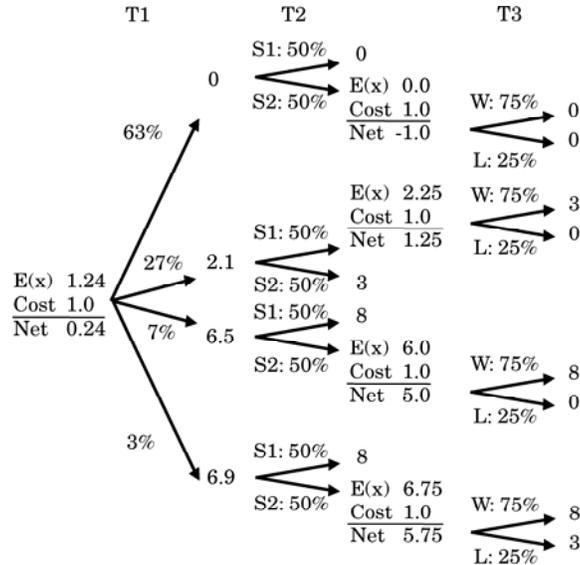
The buyer's contracting preferences may change, however, if she can write an indefinite contract and wait to see how soybean crops in the Heartland and Mississippi Portal will fare. New information, combined with the subsequent ability to invest in litigation or persuasion for her preferred term, creates an embedded option.

Figure 4 fleshes out the example. Starting with T1, the probabilities of good news and bad news in both growing regions are now combined to give four possible states of nature.¹⁴⁹ To determine the resulting buyer payoffs in each state, it is necessary to work through different outcomes related to the delivery intentions of the seller, the persuasion/litigation decisions of the buyer, and the ultimate outcome of the dispute.

148. The expected value is calculated as in *supra* note 147: $[(0.7) * (\$0)] + [(0.3) * (\$3)] - \$1 = -\0.10 .

149. Bad news strain 1—bad news strain 2 occurs 63 percent of the time $(0.9 * 0.7)$. Bad news strain 1—good news strain 2 occurs 27 percent of the time $(0.9 * 0.3)$. Good news strain 1—bad news strain 2 occurs 7 percent of the time $(0.1 * 0.7)$. And good news in both markets occurs just 3 percent of the time $(0.1 * 0.3)$.

Figure 4. Payoff to Buyer from Indefinite Contract with Litigation Option



For instance, start with the bottom branch—the rare case where the buyer receives good news in both markets. This example assumes that the seller will announce intentions to deliver strain 1 soybeans 50 percent of the time,¹⁵⁰ and if this occurs, the buyer will happily accept delivery. Each bushel brings the greatest possible profit of \$8. But the other half of the time, when the seller announces intentions to deliver strain 2 soybeans, the buyer may decide to press the case that “soybeans” means “strain 1 soybeans” even though there are new costs to taking this action. In Figure 4, the buyer expects to win 75 percent of the time, thereby receiving a legal entitlement to strain 1 soybeans and \$8 profit.¹⁵¹ She loses her case 25 percent of the

150. Changes to this assumption do not significantly affect the outcome. The buyer will still derive option value and seek to contract when the seller’s probability of delivering strain 1 is increased to 100 percent (the total expected value of the contract is \$0.14) or decreased to 0 percent (the total expected value of the contract is \$0.33).

151. This example assumes that a plaintiff’s expected chance of victory is an exogenous variable. Admittedly, the analysis here is much more complicated. A more accurate model might recognize that a party’s probability of successful litigation can depend on the level of evidentiary expenditures that he is willing to make, which in turn will depend on the amount at stake and the actions of the other litigant. See Scott & Triantis, *supra* note 13, at 825–31.

time, receiving a \$3 payoff from strain 2 soybeans. The cost of taking action is \$1 and must be incurred win or lose. Faced with these numbers, the buyer will clearly decide to invest in persuasion/litigation, because the expected value of taking action (\$5.75) outweighs the expected value of “lumping it” and accepting strain 2 (\$3).¹⁵² The total expected payoff to the buyer, therefore, is \$6.875 in this state of nature.¹⁵³

Working our way up from the bottom, the analysis is similar for the next two branches. If the buyer receives good news for strain 1 and bad news for strain 2 (the 7 percent branch), then she will again pursue the litigation option if the seller seeks to deliver strain 2 crops.¹⁵⁴ The total expected value in this case is \$6.50. The buyer will also take action when the news is reversed (the 27 percent branch)—bad news for strain 1 and good news for strain 2—although, importantly, she will now object only when the seller tries to deliver strain 1 soybeans (arguing that “soybeans” means “strain 2 soybeans”). The indefiniteness of the contract, therefore, gives the buyer additional flexibility to push for different interpretations to maximize payouts in different states of the world. She does not know when the contract is signed which strain of soybeans will emerge as the more profitable crop, and ambiguity preserves the freedom to ask for either strain after the truth comes out—increasing her expected chances of getting something greater than zero. The total expected payout in this state of nature is \$2.125.

Finally, consider the most common scenario: bad news for both markets (the 63 percent branch). As Figure 4 illustrates, the cost of litigation in this state is not worth it. The buyer will receive zero profits no matter how the case comes out and is better off avoiding the \$1 fee. In other words, the embedded option expires out of the money, and she accepts whatever strain of crops that the seller plans to deliver, earning zero profits.¹⁵⁵

152. The expected value of persuasion/litigation is calculated as follows: [(probability of winning) * (profits from winning)] + [(probability of losing) * (profits from losing)] – costs to exercise option = [(0.75) * (\$8)] + [(0.25) * (\$3)] – \$1 = \$5.75. This exceeds the payoff from accepting strain 2 soybeans (\$3), so the buyer will pursue this option.

153. Calculated as follows: [(0.5) * (\$8)] + [(0.5) * (\$5.75)] = \$6.875.

154. In fact, the benefit from exercising the persuasion/litigation option is even greater in this branch of the decision tree: the \$5 expected payoff must be compared to a \$0 payoff from accepting strain 2 soybeans.

155. The negative value of the option is shown in the figure for discussion purposes only, and the expected value for that branch of the decision tree is

When the resulting calculations are completed for all possible states of the world, it turns out that this indefinite contract nets the buyer an expected value of \$0.24 per bushel. Under these assumptions, then, she will choose to contract with the seller using an indefinite contract when she would never sign a contract with specificity for either strain of crops.¹⁵⁶ The embedded option adds new value, allowing her to invest in litigation or persuasion in some states of the world, while avoiding this expense when the strain of crops does not matter. And crucially, these persuasion costs need only be incurred after the information on market conditions comes to light.

Of course, this option is different from a conventional call option because the buyer is not assured of receiving her preferred strain of soybeans. Even if she invests in litigation, she may lose the case. Instead of an unqualified call option on strain 1 soybeans at \$10, she only has the right to buy a chance at getting strain 1 soybeans at \$10.¹⁵⁷ But as long as her perceived chances of victory are high enough—because the contract is truly vague, because she can build a reasonable argument for her interpretation of the disputed term, and because courts are willing to plug gaps¹⁵⁸—then there will be some option value to the indefiniteness on the day that the contract is signed.

b. Seller Options

The focus has remained on the buyer thus far, but the seller could just as easily enjoy an embedded option from contractual ambiguity. Just as the buyer benefits from an embed-

\$0, not -\$0.50. This is true because the buyer will not litigate when the seller announces intentions to deliver strain 2 crops, but will simply accept them for zero profits.

156. Cf. Luehrman, *supra* note 113, at 89–99 (showing how option theory can turn a losing project into one with positive net present value). Of course, the buyer's decision to only contract with ambiguity is driven by the numerical assumptions in this example. But even if a buyer derives positive value under both specific and ambiguous contracts—thus always electing to contract—she may still wish to contract with ambiguity to secure an interpretive option and enjoy a greater expected payoff.

157. Value might also arise in a more complex model with compound options from the right to abandon claims without incurring the full costs of investment. See Cornell, *supra* note 29, at 187.

158. And perhaps because of cognitive biases that cause litigants to overestimate their chances of successful persuasion. See Oren Bar-Gill, *Pricing Legal Options: A Behavioral Perspective*, 1 REV. L. & ECON. 203, 215–16 (2005) (describing the role of overconfidence biases in option pricing).

ded call option in this example, the seller may derive value from an embedded put—the right to sell different strains of soybeans as uncertainties lift. If conditions are right, he may also seek to contract with ambiguity for this reason.

Consider, briefly, one set of circumstances that might lead to an embedded option for the seller.¹⁵⁹ Suppose the soybean farmer does not know how each strain will fare in his fields when the contract is signed. Depending on weather, pests, and other growing conditions, either strain 1 or strain 2 may prove more bountiful, and thus cheaper to supply. Given this uncertainty, the farmer may benefit from retaining flexibility to deliver either strain of crops, after cost information emerges, and investing in an argument that the contract has been satisfied if the buyer objects.

It is possible, then, that both parties to a contract will receive an embedded option from uncertainty. If so, neither may push to resolve ambiguous terms.¹⁶⁰ And even if just one party meets the conditions necessary to create the option, he may seek to preserve the haze unilaterally. One side to a negotiation can often hem or haw to postpone pinning down a specific term—even when the other side is anxious to do so.¹⁶¹ This leads to the next logical question: what exactly are the conditions that determine whether a meaningful embedded option arises from an indefinite contract?

3. Determining Whether the Option Is Meaningful

Option valuation is a tricky task, and it is difficult to provide a comprehensive theory for when a meaningful option of this type will arise. However, some useful, though rough, generalizations can certainly be made.

First, and most obviously, the contract must have a missing or vague term that is subject to multiple meanings. This

159. For the sake of simplicity, I have chosen not to work through another numerical example.

160. The parties, of course, may not be explicitly introducing ambiguity into a contract to garner this option. They may instinctively sense that some indefinite terms are needed to close the deal or that there may be strategic value in preserving this ambiguity. *See, e.g.*, Scott & Triantis, *supra* note 13, at 835 (“[C]ontracts regularly contain vague terms such as ‘best efforts,’ ‘reasonable expenses,’ and ‘reasonable withholding of consent.’”); Triantis, *supra* note 13, at 1067 (“[V]ague expressions such as ‘reasonableness,’ ‘good faith’ and ‘best efforts’ are very common in commercial agreements.”).

161. *See* LAX & SEBENIUS, *supra* note 84, at 33–34.

might be an open term related to delivery,¹⁶² price,¹⁶³ conditions of performance,¹⁶⁴ or something else. This ambiguity is what allows the option holder to argue for legal entitlement to her preferred term down the road. Because all contracts are indefinite to some degree, this requirement is consistently met by logical necessity.

But not all ambiguities will matter. The second requirement for a meaningful option is that there is real impact to the option holder from different interpretations of the term. This is true because the value of an option grows as the variance of the underlying random variable increases¹⁶⁵—in this case the spread in value to the option holder of different interpretations of the ambiguity. Stated more simply, an ambiguity that has little effect on the option holder's ultimate valuation of the contract—no matter what the circumstances—will not give rise to a meaningful option. A vague contract for delivery to “our warehouse” will not create much of an option when the buyer's two warehouses are sitting side-by-side and she will not care where the goods end up.

Or, to take a numerical example, return to the contract illustrated in Figure 4 and reduce the good-news payoff for strain 1 soybeans to \$4. This destroys the option value in the bottom branch—where both markets receive good news—because the expected \$0.75 gain from litigation is outweighed by the \$1 litigation cost.¹⁶⁶ Many indefinite terms, therefore,

162. See, e.g., *Spang Indus., Inc. v. Aetna Cas. & Sur. Co.*, 512 F.2d 365, 366 (2d Cir. 1975) (considering a contract to sell steel where the parties agreed on the quantity and price but did not specify the timing of performance, stating only that delivery was “to be mutually agreed upon”).

163. See, e.g., *Laclede Gas Co. v. Amoco Oil Co.*, 522 F.2d 33, 56 (8th Cir. 1975) (involving a contract to sell propane gas for a cryptic “Wood River Area Posted Price for propane plus four cents per gallon”). Arguably, ambiguous price terms may be less likely to create embedded options than other vague terms. Because the impact of different price interpretations can be observed at the outset of the contract, new information is unlikely to surface that will change the parties' valuation of performance under different interpretations of the contract. In other words, the relative difference in valuation under different interpretations of the ambiguity may be unlikely to differ over time.

164. The case of *Baer v. Chase*, 392 F.3d 609 (3d Cir. 2004), discussed *supra* notes 32–47 and accompanying text, provides a good example. Recall that Chase, creator of *The Sopranos*, agreed to pay Baer for his services conditional upon the show becoming “a success.” *Baer*, 392 F.3d at 614.

165. See HULL, *supra* note 111, at 206–07, 267–71; MUN, *supra* note 21, at 149–50. Ayres explores this point in a legal context. AYRES, *supra* note 114, at 7, 44–46.

166. Cf. Cornell, *supra* note 29, at 180. Holding the other assumptions

may not matter much because, at the outset, they involve remote contingencies or unimportant events that are unlikely to make a difference to the option holder. But as the underlying variability in valuation from different interpretations rises, so too will the option value.

This does not mean, however, that the option holder must be free to argue both sides of the ambiguity. While the illustration in Figure 4 is constructed to give the buyer value from arguing that the contract can mean strain 1 or strain 2 soybeans, it is important to recognize that a meaningful option can still arise when the option holder only seeks one possible interpretation. For example, if the costs of persuading the buyer that “soybeans” means strain 2 soybeans rise to \$3 (perhaps because it is more difficult to make the argument this way), then the option value goes away in the second branch of the decision tree.¹⁶⁷ Nevertheless, the total value of the contract to the buyer is still positive.¹⁶⁸ There is enough option value from merely arguing that the contract means strain 1 soybeans, in some states of the world, that the buyer still chooses to contract.

Third, new information related to the ambiguity must come to light before the option holder needs to invest in persuasion. If the contracting timeline in Figure 1 is switched such that the buyer must decide whether to accept delivery before information on the state of nature is revealed, then the option is again destroyed. As described earlier, the die is cast, and the option holder has no way to adjust her decision based on new information.¹⁶⁹

Fourth, the value of the option will increase as the holder grows more confident that her persuasion efforts will succeed, and especially if they will succeed when it matters the most. This turns, of course, on the plausibility of her preferred term—

static, the expected value of litigation for the bottom branch drops to \$2.75: $[(\$0.75 * 4) + (\$0.25 * 3) - \$1]$. The buyer is better off lumping it and accepting the \$3 payoff from strain 2. Even with this assumption, though, the option retains value in the middle two branches (although not enough to induce the buyer to contract; the total expected value of the contract is $-\$0.12$). Taking the example to its extreme, by dropping the payoff from strain 1 good news to \$3 (the same as the payoff from strain 2 good news), the ambiguity is rendered meaningless to the buyer.

167. The expected value from litigation drops to $(\$2.25 - \$3) = -\$0.75$ and the buyer simply accepts strain 1 in that state of nature.

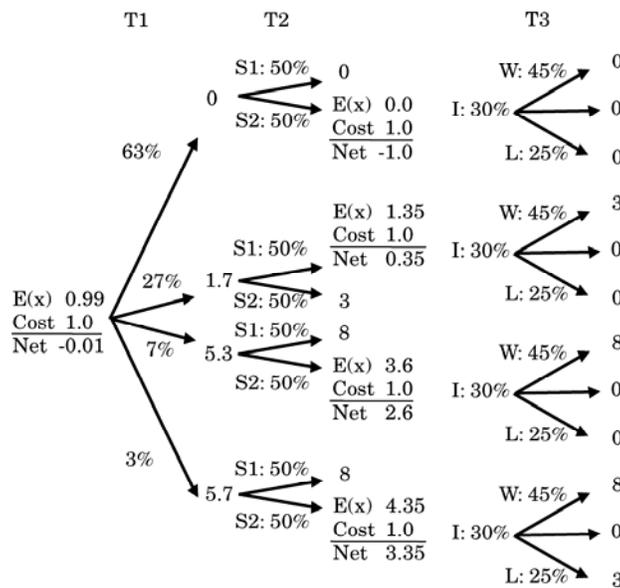
168. The total expected value in this case is \$0.07 per bushel.

169. See *supra* notes 124–26 and accompanying text.

is it a particularly twisted interpretation of language, or one consistent with industry practice? In Figure 4, for example, reducing the buyer's perceived chance of success in litigation to 25 percent drops the total contract value to $-\$0.15$, while raising it to 90 percent increases the value to $\$0.35$.¹⁷⁰

As alluded to earlier, the success of the option holder's persuasion efforts may also depend on whether courts are willing to gap-fill and apply the indefiniteness doctrine loosely. Figure 5 reconsiders the earlier example with a third possible outcome to litigation: the court strikes down the contract entirely for indefiniteness, causing the buyer to receive nothing while still incurring the $\$1$ cost of exercising the option.

Figure 5. Payoff to Buyer from Indefinite Contract with Litigation Option (Including 30% Probability of No Contract via Indefiniteness)



It can quickly be seen that this is disastrous for the buyer: even a 30 percent chance of annulment, as illustrated, will wipe out most of the option value and prevent the buyer from contracting. So courts must be willing to enforce vague contracts, at least some of the time, for embedded options to matter.

170. The break-even assumption here is a 44 percent perception of victory, so the buyer need not believe she will win a majority of the time in order to enter the contract, at least under these assumptions.

Greater use of the indefiniteness doctrine might severely limit the value of embedded options.

Finally, transaction costs of contracting and the costs of the subsequent investment will affect the outcome. We might expect that contracting costs for vague contracts will be less than those for more detailed contracts.¹⁷¹ If so, there is an additional benefit from the ambiguity—although this bears no relation to the option value.¹⁷² The cost of the subsequent investment, however, will influence the significance of the embedded option—just as the strike price of a stock option determines an investor's willingness to exercise it. If the investment cost vastly exceeds the likely benefit from a successful outcome, the option is way out of the money and worth little.¹⁷³ Conversely, if investment costs decline relative to the potential payoff, then the embedded option's value is magnified.¹⁷⁴

In summary, a number of factors must be present before meaningful option value arises. Theoretically this can certainly happen. How often these factors occur—and whether the resulting options matter much—raise interesting empirical questions.

4. Cognitive Limits to Pricing Embedded Interpretive Options

Before turning to the economic impact of these options, it is important to raise one final point—the creation or cost of an embedded interpretive option may not be fully appreciated by both parties. This could be true for two primary reasons: a cognitive failure to recognize the circumstances that give rise to the option, and a lack of information necessary to price the option accurately. Each problem is considered in turn.

First, an embedded option will often be created without explicit negotiation over an ambiguous term, especially if the parties remain silent with respect to the relevant contingency. Gaps can arise from many unexpected sources, and what is important to the option buyer may not even appear on the option seller's radar. Because embedded interpretive options are

171. See *supra* notes 15–16 and accompanying text.

172. This difference can be seen in Figure 4 by simply reducing the costs of contracting below the \$1 mark used in Figures 2 and 3.

173. To see this, increase the costs of litigation/persuasion in Figure 4 to \$10. The option is rendered meaningless.

174. For example, dropping the litigation costs in Figure 4 to \$0.10 boosts the buyer's expected contract value to \$0.40.

formed automatically under the right circumstances (ambiguity plus new information plus judicial willingness to fill gaps), there are reasons to believe that the option seller may not pay sufficient attention to the possibility of an embedded option—or even realize that she has written one. For instance, parties often make decisions based on simplifying patterns, or heuristics, that fail to take account of observations that are not readily apparent.¹⁷⁵ We might therefore expect most parties to contract based on easily observable terms, while ignoring the potential of embedded options from less salient contractual gaps.

There may be an important difference, then, between embedded options from indefiniteness and more transparent options, such as those sold in an output or requirements contract. With the latter, the parties are more likely to be aware of the option-creating term and to have made an explicit or implicit deal to transfer the risk of greater or lower output to one side.¹⁷⁶ With an embedded interpretive option, however, the option seller is forced to write the option because the other party can always mount unilateral claims about a contract's "true" meaning if it is indefinite. The option seller may be much less likely to realize exactly what she is trading or the nature of the risk she accepts.

Arguably, this lack of transparency should not matter, and any resulting option could still be considered part of an implicit deal between the parties. Certainly there is nothing inherently wrong with an embedded interpretive option, and it need not be a zero-sum transfer.¹⁷⁷ And it is true that the option seller agrees to abide by an indefinite contract when she might have pushed to spell out the disputed term in more detail. In this

175. The pioneering articles in this field include Amos Tversky & Daniel Kahneman, *Availability: A Heuristic for Judging Frequency and Probability*, 5 COGNITIVE PSYCHOL. 207 (1973) and Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCI. 1124 (1974). For more recent discussions of cognitive biases in the economic analysis of law, see Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998); Russell B. Korobkin & Thomas S. Ulen, *Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics*, 88 CAL. L. REV. 1051 (2000).

176. See Katz, *supra* note 115, at 2230–34; Scott & Triantis, *supra* note 115, at 1429, 1454; Weistart, *supra* note 131, at 607–22.

177. The parties could conceivably convert any embedded option into an explicit option and trade the risk more transparently in a net-gain transaction. For example, the soybean farmer might offer to sell strain 1 soybeans for a certain price but retain the right to substitute strain 2 soybeans under certain circumstances. I thank Lee Fennell for this point.

sense, the seller could be viewed as acquiescing to any resulting interpretation that arises.

But this may be a somewhat strained view of “contractual intent.” And it also takes us to the second problem: in the real world, an option seller may lack information necessary to price an embedded interpretive option accurately. As we have seen, the value of an embedded option will depend on a number of opaque factors, such as the buyer’s cost and confidence of success in litigation, the underlying variability in the buyer’s valuation of different interpretations, and the likelihood that new, relevant information will emerge before performance is due.¹⁷⁸ Option sellers may be hard-pressed to gather this information, or they may lack the cognitive skills to process it and price risk accurately if they can somehow derive estimates.¹⁷⁹ The problem thus parallels other models of information asymmetry in contract law, but, arguably, the information here is even further removed from the uninformed party.¹⁸⁰

Returning to the earlier example, the soybean seller may have no idea how confident a buyer is that she can convince the seller, or a court, that her preferred strain of soybeans should be delivered.¹⁸¹ If the buyer is confident, then a valuable option may be created. If not, no option arises. The same thing holds true of the underlying variability in the buyer’s valuation of different soybean strains. These facts, and other relevant buyer characteristics, may be unknown by the seller, and they have little reason to emerge during contract negotiations.

Thus, cognitive biases and information asymmetries may preclude an option seller from realizing exactly what she is

178. See *supra* Part II.B.3.

179. The pricing of options can, after all, grow complicated rather quickly. In particular, volatility is the trickiest variable to calculate, and there are many alternative approaches. See HULL, *supra* note 111, at 206–07, 267–71; MUN, *supra* note 21, at 149–50. It may be too much to expect that options analysis will be used in most contractual settings, even between sophisticated commercial parties.

180. In one common model of contracting under asymmetrical information, the seller lacks information on a buyer’s valuation of a good. See, e.g., George S. Geis, *Empirically Assessing Hadley v. Baxendale*, 32 FLA. ST. U. L. REV. 897, 897–98 (2005). In the options context, however, it is not just the point valuation estimates for a population that matters, but rather the variability of valuations under different interpretations of an ambiguous term. This information, along with data on the other relevant option pricing variables, may be even less transparent to a seller.

181. And, again, there may be reasons to believe that this will happen more often than it should. See Bar-Gill, *supra* note 158, at 203–10, 225–27.

trading or from accurately pricing the option. As a result, some people who get an option through vague language likely get it for free—or at a bargain rate—even though it imposes real costs that the other party would not have accepted without an adjustment elsewhere in the contract terms. This suggests that the creation of an embedded interpretive option may sometimes be problematic from an economic point of view. The next two sections consider this possibility more formally in relation to two core functions of contract law.

C. THE IMPACT ON EFFICIENT TRADE

A frequently stated goal of contract law is to support the transfer of goods and services to higher value users.¹⁸² If Ann values something \$100 and Beth just \$90, then the law should strive to get the good to Ann. This valuation diversity may come from different potential uses of the good, from different attitudes toward the risk of future price fluctuations, or from some other source.¹⁸³ But whatever the basis, legal rules that hinder efficient trade should be viewed suspiciously from an economic perspective.

Unfortunately, efficient trade may be distorted if the embedded options created by indefinite contracts are ignored or underpriced due to the reasons just discussed. A seller might, for example, contract to sell goods even though the price that the seller “really” receives—when the buyer’s embedded option is taken into account—falls below the seller’s cost to produce. Conversely, a buyer may ignore embedded interpretive options garnered by a seller and purchase a product even though the price that the buyer “really” pays exceeds her valuation.

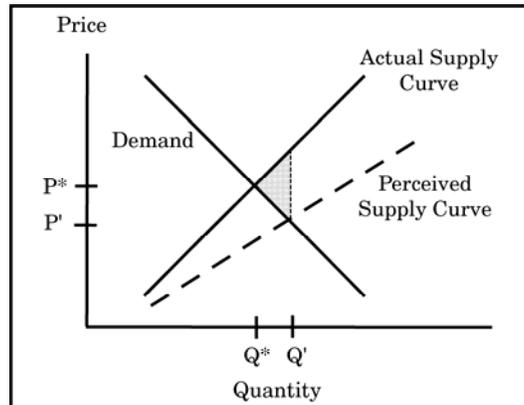
Figure 6 considers the problem conceptually by presenting a simple supply and demand curve in a market with one buyer

182. See, e.g., Posner, *supra* note 15, at 1583 (“The goal of a system, methodology, or doctrine of contract interpretation is to minimize transaction costs, broadly understood as obstacles to efforts voluntarily to shift resources to their most valuable use.”); Schwartz & Scott, *supra* note 17, at 544 (“[C]ontract law should facilitate the efforts of contracting parties to maximize the joint gains (the ‘contractual surplus’) from transactions.”). Of course, facilitating economic wealth maximization is not the undisputed normative goal of contract law. A rich literature offers various approaches for choosing between doctrinal alternatives grounded in morality, philosophy, psychology, and other disciplines. See, e.g., BRIAN BIX, JURISPRUDENCE: THEORY AND CONTEXT 210–13 (3d ed. 2004) (surveying some of these approaches).

183. See Craswell, *supra* note 52, at 488–89.

and one seller.¹⁸⁴ The buyer is willing to purchase more of the good as prices drop. And the seller, facing a rising cost structure, is only willing to produce more if prices rise. The efficient contract occurs at P^* and Q^* , where buyer and seller valuations meet.

Figure 6. Trade Distortion with Unperceived Buyer Option



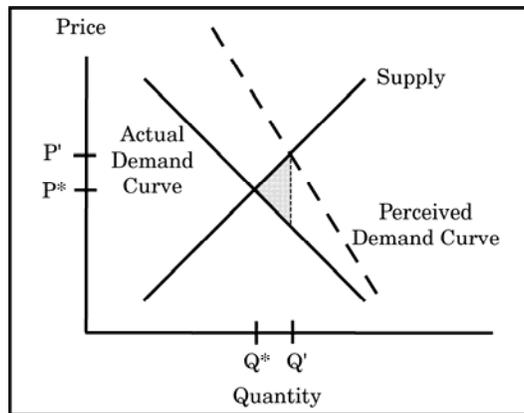
But if the seller ignores (or underprices) the cost of an embedded option conferred on the buyer, then the seller will perceive a supply curve that is shifted out (portrayed as the dashed line in Figure 6).¹⁸⁵ In other words, he is willing to accept a lower price for any given level of quantity because he has discounted the creation of the option. The shift in supply means that buyer and seller agree instead to trade at Q' and P' . An inefficient amount of trade takes place—where the buyer purchases goods she values less than the seller—for the quantity between Q^* and Q' , resulting in a net loss of social welfare, as illustrated by the shaded triangle in Figure 6. In essence, the buyer contracts to purchase goods that are not worth producing.

184. Anticompetitive effects are ignored in this analysis.

185. The figure portrays the option value as increasing disproportionately when the buyer holds a higher valuation of the goods; this outcome will be true under certain assumptions. Specifically, the analysis assumes that the other variables in the option-valuation model (volatility, interest rate, length of contract, and strike price) are held constant. Changing these assumptions might result in a different type of shift in the supply curve. As long as an embedded option is created, however, some deadweight loss—as portrayed in Figure 6—will emerge.

Of course this tells only half of the story; the seller might also receive an embedded put option through contractual ambiguity. If this occurs—and if the buyer fails to comprehend or fully value the cost of the option—then the buyer's willingness to purchase the goods will shift out (again portrayed in Figure 7 as a dashed line). She will contract to buy the goods for too much because she ignores the fact that she has already paid something by writing the seller an option. Figure 7 illustrates the resulting equilibrium, which shows that a similar deadweight loss occurs as the seller produces goods exceeding the buyer's valuation (the parties again trade at Q' instead of Q^*).

Figure 7. Trade Distortion with Unperceived Seller Option



And when embedded options are created for both buyer and seller, the problem can be compounded if each side fails to recognize the option they are writing. Both curves shift out, magnifying the deadweight loss.

In summary, the creation of an embedded interpretive option will potentially cause inefficient trade in goods. Buyers and sellers may not adjust their purchase and production decisions to take the embedded option value into account. This means that excessive trade may occur when sellers throw in an extra discount or buyers toss in an extra form of payment. If the price of the embedded option was transparent, there would be little concern. The supply and demand curves would simply adjust to reflect the value of the bundled good (asset plus option). But because option sellers are unlikely to be aware of—or

fully price—the option,¹⁸⁶ each of these problems may result in an economic inefficiency.

This is not the only concern. Another potentially significant distortion can arise through inefficient investment on the contract.

D. THE IMPACT ON EFFICIENT INVESTMENT

A second important role of contract law is to enable parties to make efficient investments that increase the joint wealth created through trade.¹⁸⁷ For example, a seller, having formed a deal to vend a large quantity of unique goods, may cut costs and decrease the chances of breach by purchasing special machinery to make the goods. Or a buyer may similarly gain by investing in reliance on the contract, perhaps by building facilities next to the seller's factory in order to reap inventory benefits. Yet both investments will only pay off if the contract is honored; in economic terms, the investments are relation-specific.¹⁸⁸ Without the ability to make binding commitments, these specialized investments will not occur because each side will subject themselves to hold up renegotiation demands by the other.¹⁸⁹ Both parties will suffer a net welfare loss because they cannot invest to increase the gains from trade.¹⁹⁰ Therefore contract law plays an important role in facilitating efficient investment by providing a mechanism for parties to inexorably bind themselves.¹⁹¹

186. See *supra* Part II.B.4.

187. See, e.g., COOTER & ULEN, *supra* note 16, at 205–10; Gergen, *supra* note 6, at 997; Schwartz & Scott, *supra* note 17, at 544. For more formal models that explore the efficient investment decision, see Lewis Kornhauser, *Reliance, Reputation, and Breach of Contract*, 26 J.L. & ECON. 691, 691–706 (1983).

188. Using an example of buyer investment, Craswell offers this definition of relation-specific investment: “[I]t is any choice, be it action or inaction, which will (1) make [seller's] performance more valuable to [buyer] if [seller] does in fact perform, but (2) make [buyer] worse off than if he had not relied if [seller] fails to perform.” Craswell, *supra* note 52, at 490.

189. See COOTER & ULEN, *supra* note 16, at 205–10; Craswell, *supra* note 52, at 492.

190. Professors Schwartz and Scott discuss how contract law supports relation-specific investment and offer a helpful numerical example. See Schwartz & Scott, *supra* note 17, at 559–62.

191. See generally Charles J. Goetz & Robert E. Scott, *Enforcing Promises: An Examination of the Basis of Contract*, 89 YALE L.J. 1261 (1980). Doctrinal distortions of efficient investment decisions have also been explored in other contexts. For example, the award of expectation damages may cause parties to behave as if performance will occur with certainty, and thus they may ineffi-

Unfortunately, the embedded options explored in this Article also have the potential to distort the investment decisions of buyers and sellers. If the value of an embedded interpretive option is ignored or mispriced, then parties may choose to invest too little or too much on the contract. A seller, for example, may refuse to make efficient investments to minimize the likelihood of breach if he fails to take account of the buyer's option value. Or a buyer may overinvest in reliance on a contract if she does not recognize a seller's put option.

This problem may be easier to comprehend with an example, so let's briefly return to the farm. Suppose that our soybean grower has contracted to sell his crops to a buyer under the same timeline depicted in Figure 1. Again, the buyer might demand strain 1 or strain 2 soybeans under an indefinite contract. And she will receive new information impacting the relative value of the different soybean strains before performance is due, thus creating a qualified embedded option to receive legal entitlement to her preferred term.¹⁹² Suppose further that the creation of this option increases the value of the contract to the buyer from 10 to 20, but that cognitive limits prevent the seller from recognizing the option.

The seller is now considering an investment where he would build a small harvesting facility near the buyer's warehouse. The investment is relation-specific, such that it will only reduce the likelihood of breach for this specific buyer. Table 1 assigns some hypothetical numbers (on a per bushel of soybeans basis) to the investment.

Table 1: Potential Seller Investment

Investment	Cost	Chance of Breach	Perceived Damage	Actual Damage
None	0	40%	10	20
Building	3	20%	10	20

Given these assumptions, how will the farmer invest? In general, he will seek to minimize his expected cost of performance, which is a function of investment expense, the probability of successful performance, and the damages for breach. If the

ciently overinvest in reliance on the contract. See COOTER & ULEN, *supra* note 16, at 206–08; Posner, *supra* note 1, at 834–36.

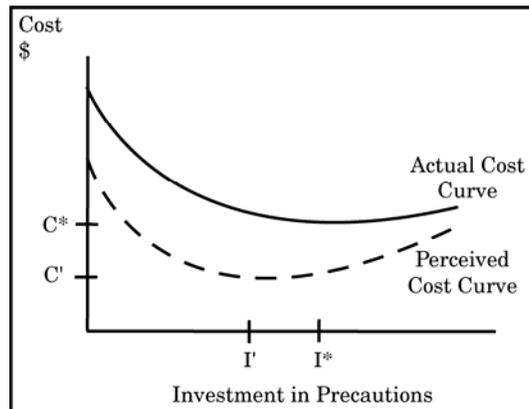
192. As explained earlier, the option is qualified in the sense that no party may exercise it with certainty. Rather, an additional investment in persuasion or litigation buys a chance at obtaining a legal entitlement to one's preferred term.

seller could recognize the embedded option, he would weigh the cost of investment against the incremental gains and choose to invest ($20 * .2 + 3 < 20 * .4 + 0$).¹⁹³ This is the efficient choice because the investment will increase the overall gains from trade when the buyer's full valuation is taken into account.

But if the seller ignores or underprices the buyer's option—such that the seller perceives the cost of breach at just 10—then the existence of the embedded option will change the result. Now, the seller will compare the costs of investing against the perceived gains and forego the efficient investment ($10 * .2 + 3 > 10 * .4 + 0$). The seller fails to take worthwhile investments to reduce the probability of breach because he underestimates what the contract is worth to the buyer.

More generally, a seller's full range of investments might be modeled as a continuum of expenditures that reduce the probability of breach.¹⁹⁴ As Figure 8 illustrates, the cost of performance will typically fall as the seller makes some investment in precautions and then rise again when incremental precautions start to cost more than they save in liability.

Figure 8. Seller Precautions with Embedded Option



The efficient seller will thus optimize at I^* , where he minimizes total expected costs. But if the seller excludes the em-

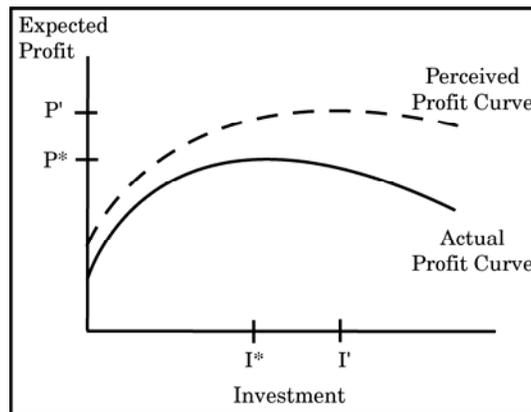
193. This formula and Figure 8 are adapted from COOTER & ULEN, *supra* note 16, at 300. The seller cost function might be portrayed as follows: (cost of the precaution investment) + (probability of breach * damages from breach). *Id.*

194. See COOTER & ULEN, *supra* note 16, at 300–03. Alternatively, seller investments may be modeled as expenditures that reduce the cost of complying with the contract. See, e.g., Schwartz & Scott, *supra* note 17, at 559–62.

bedded option, then he will perceive the cost of breach as too low (portrayed as the dashed curve in Figure 8) and inefficiently underinvest in precautions at I' .

The analysis is very similar for buyer investment on a contract when a seller put option is created. Putting aside the embedded option for a moment, a buyer will normally invest to maximize expected profits, which are typically a function of the investment cost, the payoff from the investment when the contract is performed, and the damages awarded for breach.¹⁹⁵ As Figure 9 illustrates, investment will generally rise until the marginal cost of investment exceeds the marginal benefits—this optimal level of investment is labeled I^* in the figure. Below I^* , the buyer foregoes sound investments; above it, the buyer experiences negative returns to the investment dollar.¹⁹⁶

Figure 9. Buyer Investment with Embedded Option



But if the buyer fails to recognize that she is also writing an option for the seller, then she will make her investment decision using the perceived profit curve (shown as the dashed curve in Figure 9). The buyer will now invest at I' , above the efficient amount, because her expected profit function is distorted.¹⁹⁷ Explained differently, ignoring embedded options can

195. This figure and analytical framework is again adapted from COOTER & ULEN, *supra* note 16, at 303–05. As the authors describe, the expected profit function facing the buyer can be written: (probability of performance * buyer revenues with performance) + (probability of breach * damages with breach) – (investment cost). *Id.* at 303.

196. See Robert Cooter, *Unity in Tort, Contract, and Property: The Model of Precaution*, 73 CAL. L. REV. 1, 13 (1985).

197. The effects are thus similar to the problems that may arise from the

lead to investments that have a negative net present value because they overestimate what the contract is really worth to the buyer.

In summary, this means that contract law faces a tricky problem. Indefinite contracts, combined with new information and judicial gap filling, can give rise to an embedded option. This, in turn, may lead to inefficient levels of trade or investment if cognitive biases or informational asymmetries prevent both parties from recognizing the option. It also suggests that too many vague contracts will be formed, or that too many lawsuits will be filed on the back end, to pursue a preferred-term entitlement. The remainder of this Article, then, focuses on the next logical question: is there anything that contract law—and the indefiniteness doctrine, in particular—can do to mitigate these distortions?

III. IMPLICATIONS FOR THE INDEFINITENESS DOCTRINE

A. FORMAL INDEFINITENESS DOCTRINE?

It is tempting to conclude that courts should reinstate a formal version of the indefiniteness doctrine—one that brooks no ambiguity. Since embedded options are a function of judicial gap filling and sometimes cause inefficiencies, why not simply police and annul all indefinite agreements? A formal approach would force parties to enunciate the terms of their agreements, obliterating options from ambiguity and the resulting economic distortions.¹⁹⁸

But such a hard-line notion of the indefiniteness doctrine presents its own concerns. First, an obvious flaw in this argument is that all contracts will retain some ambiguity because parties can never spell out the implications of every remote contingency.¹⁹⁹ Nor would we want them to—the transaction

use of expectation damages. *See supra* note 191.

198. Judge Cardozo appears to endorse such an approach in the famous case of *Sun Printing & Publishing Ass'n v. Remington Paper & Power Co.*, 139 N.E. 470 (N.Y. 1923). In that case, he explicitly considers and rejects the temptation to fill an ambiguous contract term (related to the length of the contract) because this would have given rise to a series of options for the buyer. *Id.* at 471. For a more detailed analysis of the case, see Lawrence A. Cunningham, *Cardozo and Posner: A Study in Contracts*, 36 WM. & MARY L. REV. 1379, 1393–95 (1995).

199. *See supra* notes 57–58 and accompanying text.

costs would eat up any benefits from trade. Taking a formal indefiniteness doctrine to its extreme, then, would undermine the sanctity of contract because all deals could be unwound.

In fact, overuse of the indefiniteness doctrine might give rise to another embedded option problem. A party would honor a deal if it later proved convenient, but raise a remote ambiguity to cancel it for indefiniteness if events change and he no longer wished to be bound. Under this logic, then, either side might have an embedded option to annul a contract for indefiniteness. This option to cancel would, most likely, be recognized by both parties, and they would be unwilling to make relation-specific investments and unable to enjoy other benefits of contractual certainty. This point parallels, of course, a problem that can arise with other defenses to contract formation—such as incapacity, illegality, and the like—if they extend too far.²⁰⁰

And even if these concerns can be managed—perhaps with a balancing approach, which I will return to shortly—the costs of embedded option distortions still need to be balanced against the gains from gap filling. After all, gap filling and judicial interpretation can play a valuable, efficiency-enhancing role by reducing the transaction costs of contracting.²⁰¹ Reinstating an overly formal indefiniteness doctrine may therefore swing the pendulum too far the other way.

An optimal approach to indefiniteness, then, might go beyond an all-or-nothing attitude and take on these concerns directly in an attempt to get the balance right.

B. PRO-DEFENDANT GAP FILLERS

A recent article by Omri Ben-Shahar seizes upon the dichotomous nature of the indefiniteness doctrine and offers a middle-ground solution in the form of “pro-defendant gap fillers.”²⁰² Under this approach, when parties deliberately fail to reach consensus on some issues, courts would neither toss out a contract nor uphold it with judicially imposed terms.²⁰³ Instead, courts would give each party the right to enforce a partially delineated agreement—but only with the ambiguous terms

200. See, e.g., Juliet P. Kostritsky, *Illegal Contracts and Efficient Deterrence: A Study in Modern Contract Theory*, 74 IOWA L. REV. 115, 116–23 (1988).

201. See *supra* notes 62–68 and accompanying text.

202. Ben-Shahar, *supra* note 22, at 390.

203. See *id.* at 391–92.

skewed to favor the *other* side.²⁰⁴ If everything is agreed upon except form of payment, for example, a seller could enforce the deal for generous credit terms, and a buyer could enforce it for cash.²⁰⁵ Pro-defendant gap fillers might allow parties to secure a partial commitment, while still giving them freedom to veto judicially imposed terms in the face of purposeful ambiguity.²⁰⁶

If successfully implemented, a pro-defendant gap-filling approach might also mitigate the problems arising from the embedded options explored in this Article. Parties would no longer have incentives to leave their agreements intentionally vague to garner an option, because they would lose any chance of legal entitlement to their preferred term down the line. In other words, pro-defendant gap fillers would destroy embedded options by taking away flexibility to argue that an indefinite term means what you want it to mean after uncertainties lift. Without this option value, then, the economic distortions explored earlier should be alleviated.

It is easy to see how pro-defendant gap fillers could quash an option by returning to the example depicted in Figure 4. Assuming that courts determine whether a term is pro-plaintiff at the time of litigation—and not when a contract is initially formed—then this approach would drop the chances of successful litigation to zero.²⁰⁷ The buyer in Figure 4 will only be able to enforce the agreement for less profitable soybeans—strain 1 in the second branch of the decision tree and strain 2 in all other branches—and there will be no reason to incur the costs of exercising the option. The ultimate effect should be to force parties to explicitly spell out value-enhancing options.

But the trick, as usual, lies in the implementation. A judge would need to determine when to use pro-defendant gap fillers.

204. *See id.* at 411–20.

205. *Id.* at 390. As Professor Ben-Shahar explains: “[I]f a buyer and seller agree on many provisions but leave others, such as payment terms, ‘to be agreed upon,’ then each party should be able to enforce a deal supplemented by payment terms that are most favorable to the other party.” *Id.*

206. *See id.* at 392.

207. It is possible that courts might determine whether a term was pro-plaintiff by looking back to the time of contracting to see what term was most likely to benefit the plaintiff. But such an approach is undesirable for two reasons. First, it would allow plaintiffs to argue for some terms that may not have been pro-plaintiff at the time of contracting but are now due to new information (for example, branch 2 in Figure 4). Second, this approach is likely to require greater judicial resources; instead of looking at the pleadings and imposing the defendant’s requested term, the court would need to assess the impact of various terms on the plaintiff at the time of contracting.

If they are only used some of the time—and there are reasons to believe that majoritarian defaults or penalty defaults might be appropriate for some ambiguities²⁰⁸—then an option may still emerge from the chance that a favorable gap filler will again be imposed. The contest just takes place one step further up the analytical chain, as courts wrestle with what default standard to apply, and whether parties purposefully intended a term to be vague or just sought a majoritarian gap filler to save transaction costs. Another possible challenge may be determining whether a term is really pro-defendant.²⁰⁹ As seen earlier in this Article, the same term might be pro-defendant in one context but pro-plaintiff in another—all depending on how future uncertainties are resolved.²¹⁰ A third question is whether increased administrative costs would be worth the trouble.

On balance, though, pro-defendant gap fillers do offer an intriguing middle-ground approach with the potential to eliminate, or at least reduce, economic distortions that may arise from the cognitive limits on pricing embedded interpretive options.

C. EFFICIENT INVESTMENT IN CONTRACTUAL SPECIFICITY

A third possible approach to the indefiniteness problem is to focus directly on whether parties have made efficient upfront investments in contractual specificity. A court would strike down the contract for indefiniteness if there were low-cost, verifiable metrics that the parties could have seized upon during the contracting stage to define their obligations more precisely. Conversely, a court would uphold the agreement, gap filling as necessary, if there were good reasons why a deal was not delineated with precision. This might include agreements where the indefiniteness involved a low probability event, or an important, but unverifiable, term. In other words, courts would shift the analysis to an explicit consideration of the parties' choices about formation costs.

Over time, greater and more explicit use of the indefiniteness doctrine in this manner might reduce the economic distortions outlined in this Article. Courts would still plug gaps in

208. See Ben-Shahar, *supra* note 22, at 391–92 (describing how the selection of a majoritarian, penalty, or pro-defendant gap-filling standard should depend on the underlying reason for the contractual incompleteness).

209. *Id.* at 413–14, 418–20.

210. See *supra* notes 154–55 and accompanying text.

indefinite contracts, but the resulting distortions from interpretive options may be less problematic for two reasons. First, much of the gap filling would occur for remote contingencies or unimportant terms, where meaningful option value is unlikely to arise.²¹¹ Second, the agreements most likely to result in significant embedded options—those with a purposeful ambiguity that could have easily been resolved upfront—would face a greater chance of judicial invalidation, cutting back the economic distortions from the option.²¹²

There are at least two other potential benefits to this approach. First, it might still lead to systemic transaction-cost savings because courts would be willing to gap-fill for low probability contingencies. This would leave parties free to draft a bare-bones agreement as long as they detailed the most important, verifiable terms and were comfortable with the legal defaults for the rest of the terms. Second, the fact that judges would strike down deals when parties fail to make adequate, up-front investments in specificity might prevent parties from externalizing contracting costs to the courts.²¹³ Addressing the root cause of the indefiniteness, then, might be a way to both preserve the gains and excise the costs of gap filling.

And while this approach would undoubtedly be difficult to implement, there is evidence that some courts already take these factors into account. Recall that Robert Scott's empirical work on indefiniteness cases concluded that there was no apparent link between invalidation for indefiniteness and the subject of the transaction (goods covered by the U.C.C. versus services) or the jurisdiction where the case was heard (states favoring a common law approach versus those favoring a looser U.C.C.-based approach).²¹⁴ But he did find that courts seem to "focus on whether the parties have fully exploited verifiable information in concluding their agreements."²¹⁵ Where the contract is incomplete because a contingency is remote or a term unverifiable, then courts have often filled the gap. And contracts that are left vague, when a verifiable term could have

211. See *supra* notes 165–68 and accompanying text.

212. As an earlier example showed, even slight increases in the probability that the indefiniteness doctrine will be used can cut option value and assuage economic distortions. See *supra* Figure 5 and accompanying discussion.

213. See Posner, *supra* note 59, at 9–12.

214. Scott, *supra* note 8, at 1653–55.

215. *Id.* at 1654.

been included at a low cost, often seem to be annulled.²¹⁶ So some courts may already be undertaking this analysis, at least implicitly.

One other downside of this approach, beyond the judicial administrative burden, is the fact that it still represents an all-or-nothing attitude to indefiniteness. As seen earlier, there might be good reasons to allow parties to purposefully bind themselves to some partial agreement—without a need to spell out every important, verifiable term.²¹⁷ This approach would not allow such freedom.

Of course the problem is—and has always been—where to draw the line. Commentators studying the indefiniteness doctrine have repeatedly cautioned that courts should not make agreements for parties who can do so themselves.²¹⁸ Option theory underscores the dangers by explicitly showing economic costs to excessive gap filling. A perfect solution probably requires a theory of optimal specificity, which raises fundamental issues related to rules versus standards.²¹⁹ Lacking that, courts may need to undertake a case-by-case analysis that asks whether parties made appropriate up-front investments in specificity—or at least explores why they left an agreement indefinite. For this reason, a bright-line rule for the indefiniteness doctrine is unlikely to be very helpful.

CONCLUSION

The study of contract law over the past few decades has been, to a great extent, the study of default rules. Following in the tradition of legal realists, many commentators have called for comprehensive gap-filling provisions that allow courts to honor contractual intentions and enforce agreements that are “complete enough.” Much of the work emphasizes how gap filling can grease the gears of trade.

216. See *supra* note 75.

217. See *supra* Part III.B.

218. See *supra* notes 50–51 and accompanying text.

219. For greater discussion of rules versus standards in the contracts context, see Richard Craswell, *In That Case, What Is the Question? Economics and the Demands of Contract Theory*, 112 YALE L.J. 903 (2003); Katz, *supra* note 1; Scott & Triantis, *supra* note 13. On the rules versus standards issue more generally, see Colin S. Diver, *The Optimal Precision of Administrative Rules*, 93 YALE L.J. 65 (1983); Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557 (1992); Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 HARV. L. REV. 1685, 1687–1713 (1976); Pierre Schlag, *Rules and Standards*, 33 UCLA L. REV. 379 (1985).

But there is an underexplored cost to this approach. Contractual ambiguity, coupled with ardent judicial gap filling, can create an embedded option because a party is free to argue unilaterally for her preferred interpretation as uncertainties clear. This Article has demonstrated how parties may set their purchase and production decisions without taking this embedded interpretive option into account, undermining important goals of contract law. Inefficient trade may occur as buyers contract for goods that are not worth producing or sellers make products that exceed buyer's valuations. Or inefficient investments may be pursued when option value is ignored. In short, there are distortions in the shadow of judicial gap filling.

Unfortunately, there may be no one-size-fits-all solution. Formal use of the indefiniteness doctrine to strike down vague contracts might help, but this could lead to new problems as well. Pro-defendant gap fillers are a possibility. A perfect solution requires, perhaps, a theory of optimal specificity, which raises complex jurisprudential issues related to the fundamental tradeoff between rules and standards. In the meantime, courts may wish to explicitly ask why contracts have been left vague—striking down bare-bones agreements that could have easily specified an important term—and continue to recognize that the indefiniteness doctrine has a meaningful role to play in contract law.