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Avery W. Katz

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Avery Katz
University of Michigan Law School

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THE STRATEGIC STRUCTURE OF OFFER AND ACCEPTANCE: GAME THEORY AND THE LAW OF CONTRACT FORMATION

*Avery Katz**

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* Assistant Professor of Law and of Economics, University of Michigan. B.A. 1980, Michigan; A.M. 1983, J.D. 1985, Ph.D. 1986, Harvard. — Ed. I am grateful to Ian Ayres, Mark Bagnoli, Richard Craswell, Sharon Feldman, Richard Lempert, Richard Pildes, Roberta Romano, Joel Seligman, Steven Shavell, Robert Thomas, James J. White, and seminar participants at Michigan, Georgetown, Chicago, Harvard, and Yale Law Schools for helpful comments, and to the Cook Fund of the University of Michigan Law School and the Center for Studies in Law, Economics, and Public Policy at Yale Law School for financial support.

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I. INTRODUCTION: THE COSTS OF A CONVENTIONAL APPROACH

The purpose of this article is to promote a particular research program; namely, the use of game theory to analyze the law of contract formation. Although I will often simply speak of offer and acceptance in my discussion, I mean to refer to a broader set of issues than are commonly denoted by this doctrinal label. My program transcends the narrow issue of whether particular communications technically should be classified as offers and acceptances, and includes questions often analyzed under the rubrics of implication and interpretation. At its broadest, my argument addresses all legal rules that answer two types of questions: First, which objectively verifiable actions or subjectively experienced intentions suffice to conclude a bargain and form a contractual obligation? Second, how do these actions and intentions affect the substantive content of any contract formed?

The legal doctrines governing these questions present some of the more subtle and technical problems in all of the law. Their metaphysical controversies and mechanical intricacies have puzzled countless lawyers and judges and have consigned generations of law students to torment at the hands of their professors. Yet the law of offer and acceptance has generated relatively little interest in the literature that addresses contract law from a policy perspective. Instead, commentators concerned with public policy have focused largely on the consequences of contracts after formation.

In particular, there has been little formal analysis of the rules of contract formation and interpretation in the law and economics literature, except in a narrow, limited sense.¹ Legal scholars influenced by economics have generated a substantial literature on contract reme-

1. There are a few recent and laudable exceptions, most prominently Ayres & Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87 (1989). An alternative approach is provided by Coleman, Heckathorn & Maser, *A Bargaining Theory Approach to Default Provisions and Disclosure Rules in Contract Law*, 12 HARV. J.L. & PUB. POLY. 639 (1989), who examine the law of bargaining from the perspective of cooperative game theory. As I explain in Part III, I consider the noncooperative game-theoretic approach of the former authors more useful, since the cooperative approach, while illuminating, is not well grounded in the theory of individual rational choice.

dies,² on excuse for mistake, impossibility, and frustration of purpose,³ and on private enforcement of contracts,⁴ among other topics. But these scholars nonetheless have been primarily concerned with predicting the consequences of substantive contract terms of various sorts, and with identifying the optimal content of these terms.

These writers, for the most part, have addressed formation and interpretation only in arguing that the particular substantive terms that they have identified as optimal should as a general practice be implied, either in fact or in law, by courts enforcing contracts. This type of interpretive claim is widespread in the policy literature. A common version of it holds that because it is too costly for contracting parties explicitly to provide for every possible aspect of their bargain, courts can promote efficiency, fairness, or other socially desirable objectives by implying the optimal terms when the parties fail expressly to provide otherwise. A variation on this theme, while recognizing that optimal substantive terms may vary depending on the contracting parties' individual circumstances, asserts that a default rule that implies terms optimal for typically situated parties will best promote the desired social goal. Additionally, some claim an optimally chosen default rule will minimize the total costs incurred by those who wish to negotiate around the implied term.

While these sorts of arguments have intuitive appeal in many settings, the premises necessary for their validity remain unexamined. In order to assess how parties will react to rules of presumptive interpretation, it is necessary to consider the parties' individual incentives to engage in negotiation under various possible interpretative regimes. And those who argue in favor of default rules and presumptive terms have rarely investigated the parties' incentives to bargain with anywhere near the detail or rigor that they have explored the parties' wishes regarding the particular substantive term under consideration.

2. The literature is too extensive to cite here in full. Prominent articles include Cooter & Eisenberg, *Damages for Breach of Contract*, 73 CALIF. L. REV. 1434 (1985); Craswell, *Precontractual Investigation as an Optimal Precaution Problem*, 17 J. LEGAL STUD. 401 (1988); Polinsky, *Risk Sharing Through Breach of Contract Remedies*, 12 J. LEGAL STUD. 427 (1983); Shavell, *The Design of Contracts and Remedies for Breach*, 99 Q.J. ECON. 121 (1984); Shavell, *Damage Measures for Breach of Contract*, 11 BELL J. ECON. 466 (1980); and Ulen, *The Efficiency of Specific Performance: Toward a Unified Theory of Contract Remedies*, 83 MICH. L. REV. 341 (1984).

3. See, e.g., Posner & Rosenfield, *Impossibility and Related Doctrines in Contract Law: An Economic Analysis*, 6 J. LEGAL STUD. 83 (1977); White, *Contract Breach and Contract Discharge Due to Impossibility: A Unified Theory*, 17 J. LEGAL STUD. 353 (1988).

4. See, e.g., Klein & Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 J. POL. ECON. 615 (1981); Kornhauser, *Reliance, Reputation, and Breach of Contract*, 26 J.L. & ECON. 691 (1983); Telsner, *A Theory of Self-Enforcing Agreements*, 53 J. BUS. 27 (1980); Williamson, *Credible Commitments: Using Hostages to Support Exchange*, 73 AM. ECON. REV. 519 (1983).

Accordingly, the mechanical rules of contract formation so beloved to hornbook authors and bar examiners, and the related body of legal doctrine that helps imply the content of the contract from the history of the bargaining, largely have escaped attention from those legal scholars influenced by economics.⁵ The preponderance of the literature treats such rules as largely conventional, and accordingly irrelevant for purposes of policy analysis. Instead, the prevailing if implicit paradigm is well captured by the homily that it is more important for the law to be settled than to be settled correctly.

Under this view, which might be called the conventional wisdom in both a popular and a substantive sense, it is obviously necessary that there exist rules and that they be generally observed, but their specific contents are not of independent theoretical interest. Rather, the law of offer and acceptance serves primarily a coordinating function, in much the same way that traffic ordinances do. And while we need rules to tell motorists on which side of the road to drive, it may not matter whether motorists are to be instructed to keep left or to keep right, so long as they are all instructed similarly.

The conventional wisdom's neglect of the law of bargaining is especially noteworthy given the critical importance of bargaining to the economic analysis of law. A chief message of law and economics, if not the chief message, is that the effect of legal rules cannot be understood properly without taking account of the incentive for private transactions. This message is most strikingly embodied in the well-known "Coase theorem," which in its strongest version claims that so long as the mechanisms of private ordering are frictionless, legal rules will have no effect on the allocation of resources.⁶ One might have expected, therefore, that the set of legal rules that regulate private or-

5. One can identify, of course, exceptions to this generalization. The most prominent of these is the discussion of duties of disclosure in bargaining initiated by Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 J. LEGAL STUD. 1 (1978). Kronman, who bases his analysis on the insights that private information can be socially valuable, costly to obtain, and deliberately acquired in view of its monetary return, argues that a rule entitling persons to conceal deliberately acquired information will best promote the socially efficient amount of informational investment. Since Kronman does not seriously attempt to combine his useful insights with an account of bargaining, however, his conclusion is open to question. For critiques of his argument, see Coleman, Heckathorn & Maser, *supra* note 1 at 692-707, and Ayres & Gertner, *supra* note 1. Another prominent exception is Baird and Weisberg's analysis of the "battle of the forms," which I discuss in Part VI. See Baird & Weisberg, *Rules, Standards, and the Battle of the Forms: A Reassessment of § 2-207*, 68 VA. L. REV. 1217 (1982).

6. The Coase theorem is generally agreed to have first found expression in arguments made in Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 25 (1959), and Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960), though Coase never stated the theorem as such in print and himself attributes its precise formulation to George Stigler. See R. COASE, *THE FIRM, THE MARKET, AND THE LAW* 157-58 (1988).

dering and determine its frictions would have occupied a more prominent place on the research agenda of law and economics.

It would be surprising in light of current theoretical understandings of bargaining, moreover, if contract formation and interpretation rules served merely a coordinating role. Most formal economic accounts of bargaining conclude that when information is imperfect or communication costly, self-interested parties generally will fail to realize the full potential surplus from exchange. Just how much is wasted will depend on the precise structure of the institutions that govern the bargaining.⁷ Different legal rules, once established, imply different institutional structures for contracting parties and may induce different forms of bargaining behavior. Hence they can have important consequences for the efficiency of exchange.

If, as the Coasian world view suggests, the consequences of all legal rules turn on the outcome of private bargaining, it is unclear why economically influenced lawyers have failed to give priority to studying the law governing the bargaining process. While it is not really my aim here to answer this question, I can offer some speculations. One possibility is that the formal techniques economists use to model strategic behavior have been refined only recently and have so far been inaccessible to lawyers. Furthermore, because these methods are relatively abstract and sometimes inconclusive, lawyers have been discouraged from trying to master them.⁸ This answer is perhaps overly facile given the wholesale use such tools have found in the study of corporate control; nonetheless, a major purpose of this article is to help bring them to a wider audience.

A second explanation might lie in one particular strand of the Coasian tradition — the claim that impediments to bargaining are largely insignificant in practice. In contrast to the Coase theorem, which purports to be an analytic statement, this claim is a contingent proposition open to empirical challenge. Yet it retains popular influence among devotees of the economic approach — enough for Coase himself to take pains to disclaim any belief in its validity in a recent retrospective essay.⁹ The Coase theorem's aesthetic power, combined with the rela-

7. See, e.g., Farrell, *Information and the Coase Theorem*, 1 J. ECON. PERSP. 113 (1987); Myerson & Satterthwaite, *Efficient Mechanisms for Bilateral Trading*, 29 J. ECON. THEORY 265 (1983).

8. This may be rapidly changing, in light of the growing importance of game-theoretic methodology to applied microeconomics generally. The recent 1990 meeting of the AALS Section on Law and Economics, for instance, was devoted to a discussion of applications of game theory. See also Ayres, *Playing Games with the Law* (Book Review), 42 STAN. L. REV. 1291 (1990).

9. See R. COASE, *supra* note 6, at 174:

The world of zero transaction costs has often been described as a Coasian world. Nothing could be further from the truth. It is the world of modern economic theory, one which I

tively sanguine view of private ordering that infuses much law-and-economics scholarship, may have directed attention away from part of Coase's message, and away from the details of private negotiation.

But the broadest reason for law-and-economics scholars' neglect of the rules of offer and acceptance may be that more traditional legal commentators have ignored the subject as well, instead relying on the conventional wisdom. Charles Fried's description is a fair representative in this regard:

Promises — and therefore contracts — are fundamentally relational; one person must make the promise to another, and the second person must accept it. Acceptance may be assured by any conventional device, such as speaking the words "I accept" with the intention of referring to a conventional device in which the words figure. There are wide latitude and informality in what counts as an intention to accept a promise, just as the promise itself can be made in many ways.¹⁰

Now the conventional wisdom is not without its appeal, much of which stems from the fact that it happens to describe reasonably well, at least at the hornbook level, current American legal doctrine in the area. Because of the great diversity of settings in which individuals may negotiate, black-letter statements in the area are typically phrased in general language and anticipate a wide variety of possible social practices. *The Second Restatement's* definitions of offer and acceptance are illustrative:

§ 24. Offer Defined. An offer is the manifestation of willingness to enter into a bargain, so made as to justify another person in understanding that his assent to that bargain is invited and will conclude it.

§ 50. Acceptance of Offer Defined. . . . (1) Acceptance of an offer is a manifestation of assent to the terms thereof made by the offeree in a manner invited or required by the offer.¹¹

Beyond the necessarily general language of black-letter formulations, American contract law also allows contracting parties considerable leeway to choose the form of their agreement in practice. This is especially so for contracts governed by Article II of the Uniform Commercial Code, which in large part reflects the view of Llewellyn and his colleagues that commercial law should be grounded in the expectations of the community of traders.¹² Aside from its variety of specific

was hoping to persuade economists to leave. What I did in "The Problem of Social Cost" was simply to bring to light some of its properties.

10. C. FRIED, *CONTRACT AS PROMISE* 45-46 (1981).

11. *RESTATEMENT (SECOND) OF CONTRACTS* §§ 24, 50 (1979).

12. This is a view, of course, with historical antecedents going back at least as far as Mansfield. See generally Danzig, *A Comment on the Jurisprudence of the Uniform Commercial Code*, 27 *STAN. L. REV.* 621 (1975); Wiseman, *The Limits of Vision: Karl Llewellyn and the Merchant Rules*, 100 *HARV. L. REV.* 465 (1987).

provisions referring to trade usage, course of dealing, course of performance, good faith, and commercial reasonableness, Article II directs courts generally to defer to private usage in adjudicating formation issues.¹³

At a more theoretical level, furthermore, scholarly discussion of contract formation, motivated by the proverbial image of the "meeting of the minds," has typically focused on the tension between objective and subjective theories of mutual assent. This tension has underscored the questions of how communication between two individuals takes place and how the substance of that communication can be known to a third party called upon to enforce the contract. Such questions lead naturally to the philosophy of language; and so modern accounts of offer and acceptance have tended to reflect the philosophical literature's emphasis on conventional understandings as an explanation of meaning.¹⁴ This emphasis has been sustained in more recent years by theoretical accounts of contract law such as Fried's¹⁵ that, in concentrating on the basic question of why promises should be enforced, tend to take as given the meaning of promissory language.¹⁶

Other, broader currents in the history of contract law have helped reinforce the conventional wisdom. At the height of its formal elaboration in the nineteenth century, as exemplified by cases like *Adams v. Lindsell*¹⁷ and *Dickinson v. Dodds*,¹⁸ the central concerns of the law of offer and acceptance were whether and at what point a contract had been formed. With the decline of laissez-faire ideology and of traditional formalism, and with the growing acceptance of promissory estoppel as a foundation for liability, these issues receded in

13. See, e.g., U.C.C. § 2-204 (1989):

Formation in general. (1) A contract for sale of goods may be made in any manner sufficient to show agreement, including conduct by both parties which recognizes the existence of such a contract. (2) An agreement sufficient to constitute a contract for sale may be found even though the moment of its making is undetermined. (3) Even though 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.

See also U.C.C. § 2-206 (1989) ("Offer and Acceptance in Formation of Contracts. (1) Unless otherwise unambiguously indicated by the language or circumstances (a) an offer to make a contract shall be construed as inviting acceptance in any manner and by any medium reasonable in the circumstances . . .").

14. See generally Farnsworth, "Meaning" in the Law of Contracts, 76 YALE L.J. 939 (1967); Williams, *Language and the Law* (pt. 4), 61 L.Q. REV. 384 (1945).

15. See C. FRIED, *supra* note 10.

16. For an insightful critique on these grounds of promissory theories in general, see Craswell, *Contract Law, Default Rules, and the Philosophy of Promising*, 88 MICH. L. REV. 489 (1989).

17. 1 B. & Ald. 681, 106 Eng. Rep. 250 (K.B. 1818).

18. 2 Ch. D. 463 (C.A. 1876).

importance.¹⁹ Instead, the content of contractual obligation came to loom larger than its existence. This shift in emphasis was reinforced by the increase in duration and complexity of commercial relationships associated with the development of the modern economy.²⁰

Whatever the origins of modern scholarly inattention to the rules of offer and acceptance, however, it has meant the neglect of an important set of policy considerations. Economic policy issues do arise under the conventional view; yet discourse is limited to a subset of concerns that arise only in the course of administering the prevailing understandings — what might be called convention maintenance. These concerns include protecting the reliance interests of those who operate according to established convention, mediating between those using rival conventions, and providing incentives for newcomers to learn established convention.²¹

While the maintenance of a given convention is obviously important for the particular parties who use it, none of the policy considerations thereby raised gives us any assistance in deciding what the ideal convention should or could be in the long run.²² In principle, one cannot define a convention solely on the basis of reliance or expectations, simply because the reasonableness of reliance or expectation is ordinarily judged in light of prevailing background understandings.²³

19. See generally G. GILMORE, *THE DEATH OF CONTRACT* (1974); cf. Comment, *Once More into the Breach: Promissory Estoppel and Traditional Damage Doctrine*, 37 U. CHI. L. REV. 559, 574 (1970):

Most important [for private autonomy] is the fact that the point at which the bargain is struck is usually mutually identifiable to the parties. They themselves are aware of the extent to which they may act in their own interests, and of the point at which their conduct has led to a binding obligation. The requirement of consideration thus operates to delineate an identifiable sphere of precontractual conduct free of legal restraint.

20. See generally Macneil, *The Many Futures of Contracts*, 47 S. CAL. L. REV. 691 (1974).

21. Such considerations are raised by cases like *Goodman v. Dicker*, 169 F.2d 684 (D.C. Cir. 1948), and *Hoffman v. Red Owl Stores*, 26 Wis. 2d 683, 133 N.W.2d 267 (1965), where individuals seeking franchise or dealership contracts sunk substantial reliance investments in the course of preliminary negotiations, and by *Frigalment Importing v. B.N.S. Intl. Sales*, 190 F. Supp. 116 (S.D.N.Y. 1960), in which one of Judge Henry Friendly's classic commercial opinions grew out of a valiant attempt to mediate between two poultry dealers disputing the meaning of the word "chicken." One reason the preliminary negotiation cases are widely cited and studied is that they illustrate the tension between the commercial conventions used by ordinary business persons and the formal legalistic conventions expressed in traditional black-letter law, as well as the tension between the individualistic convention of hard bargaining practiced by the franchisors and the more altruistic, relational conventions supposedly favored by small business persons. The *Frigalment* case, where either one side relied on trade usage and the other on general usage, or where each relied on different trade usages, presents an analogous problem.

22. Except, of course, that a convention with lower maintenance costs, perhaps due to its simplicity, would thereby have an advantage over one with higher maintenance costs, other things being equal.

23. Theories that ground legal doctrine in the historical tradition or custom of a particular society may escape circularity, but exclude the possibility that tradition can be improved on. Moreover, the dictates of tradition may not always be clear-cut.

Any particular convention that happened to be accepted widely would involve efficiency and distributional concerns of some sort in its maintenance.

The long-run costs and benefits of a convention, however, also depend on how it affects individuals' behavior once established and accepted. To return to the traffic law analogy, having everyone keep to the left side of the road might conceivably be a better policy than having everyone keep to the right. Differences in reaction times arising from the fact that the majority of drivers are right-handed, for instance, or asymmetric features of local roads, might make one of the two conventions superior *ex ante*. Where no convention yet exists, as when a newly discovered technology or legal innovation allows a new class of transactions, such considerations can usefully guide the development of legal doctrine.

Furthermore, even when conventions are well entrenched, the long-run advantages of a superior convention might outweigh the transitional disadvantages of switching conventions. With careful planning these disadvantages can be minimized, and they are temporary. The costs of an inefficient or unfair convention, in contrast, are made up in volume; they are paid each time a transaction occurs under its auspices.

To recapitulate, for new categories of transactions, newly developed institutions, private associations, and well-run organizations able to alter their standard procedures without unreasonable disruption, a policy analysis of rival bargaining conventions may be of great practical importance. Even if it is not open to us to change existing conventions, moreover, studying their long-run consequences can help us understand how they affect efficiency, private autonomy, and other social objectives. Such an understanding may also help to evaluate other arguments that presuppose some form of private ordering as a background condition; most notably the Coase theorem.

In this article, I hope to persuade the reader of two propositions: first, that the rules of contract formation and interpretation are fundamental to understanding the outcome and efficiency of bargaining transactions; and second, that bargaining rules and institutions are best understood by a detailed inquiry into their strategic structure. By this I mean that one must carefully specify the possible choices available to parties engaged in negotiation, the temporal sequence in which the choices occur, the costs and benefits to each party for each possible sequence of actions, and the information available at each step. Only then is it possible to predict how rational or imperfectly rational indi-

viduals will behave under a given bargaining regime.²⁴ I contend that the strategic structure of offer and acceptance determines the long-run characteristics of private ordering.

Before illustrating these claims with regard to specific legal rules, however, some general background is necessary. Accordingly, Part II of this paper outlines the central role of the bargaining problem in the law and economics literature. Part III provides a necessarily incomplete survey of the economics of bargaining, and its main concepts and techniques. Part IV discusses a number of qualifications to the analysis, and sets forth the main limitations of the game-theoretic approach and the problems raised in applying it to contract bargaining.

The succeeding two Parts are the heart of the article: they apply the method to two particular doctrinal areas. Part V uses a simple model of bargaining to analyze the doctrine of acceptance by silence, and Part VI presents a model of contract negotiation in the form-contract setting and analyzes the common law duty to read. Finally, Part VII comments on the implications of the specific models for future analysis.

One caveat is appropriate, however. I do not mean to suggest that legal rules are the only important determinants of the outcome of bargaining. In many settings, social norms and ethical precepts provide well-defined and successful ways to divide the surplus from exchange and to reduce the social costs of strategic behavior.²⁵ Particular methods of dividing the gains from trade, such as a fifty-fifty split or choosing a round number, may be aesthetically appealing or may offer focal points to which the parties are drawn. Furthermore, the desire to maintain goodwill or an ongoing relationship will encourage cooperation, since an individual acquiring a reputation for contentiousness may find it difficult to attract future contract partners. All these factors would be important elements in a complete account of negotiation. Nevertheless, when social sanctions are insufficient to achieve full cooperation, as they often are in reality, the legal rules of bargaining play an important role. Indeed, legal rules that discourage cooperation make it more difficult for nonlegal institutions to perform their facilitative roles in exchange.²⁶ Accordingly, I focus here only on the

24. While I am by no means committed to rational-choice models as the only plausible description of human behavior, I do view the assumption of rationality as the most useful starting point for a research strategy for studying strategic interaction. On this question, see *infra* Part IV.

25. See, e.g., Ellickson, *Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County*, 38 STAN. L. REV. 623 (1986); Macaulay, *Non-Contractual Relations in Business: A Preliminary Study*, 28 AM. SOC. REV. 55 (1963).

26. For one thing, settlements reached by private actors will typically be influenced by their

role of legal rules and institutions.

II. THE BARGAINING PROBLEM IN LAW AND ECONOMICS

While a few hard-core loyalists may maintain that the premises of the Coase theorem generally are satisfied in actual practice, most scholars regard the claim that private ordering is frictionless as trivializing the problem of cooperation. Instead, Coase's real influence was in focusing attention on impediments to exchange which arise in particular institutional settings. Such impediments are typically grouped under the general rubric of "transaction costs" — a term embracing a variety of technological and informational factors that differ widely in origin and explanation. In the broader Coasian view, the regulatory consequences of law can be understood only by focusing on transaction costs and on the institutional structure generating them.²⁷

The generality of the transaction cost concept and the looseness with which the term has been used in the law-and-economics literature, however, have obscured Coase's lesson. Consequently, some have disparaged his theorem as a tautology,²⁸ as indeed it would be if transaction costs were defined as anything preventing a mutually beneficial bargain. The considerations commonly included under the transaction-cost label can more usefully be divided into two groups: *costs of implementation* and *costs of strategic behavior*.²⁹ Implementation costs are the real resources used up in bringing contracting parties together, in executing and administering the resulting agreement, in enforcing any bargain reached, and in settling any disputes that arise along the way. These costs include the expense of communication among the parties, of acquiring information about the value of the relevant costs and benefits, of drafting and executing any writing, of transporting any physical objects at issue, of making and collecting payments, of detecting any violations of the bargain, and of conducting any necessary renegotiations.

Since implementation costs are measured in resources, they are di-

views of how legal authorities would resolve the situation should other institutions fail in the task. See, e.g., H. ROSS, SETTLED OUT OF COURT: THE SOCIAL PROCESS OF INSURANCE CLAIMS ADJUSTMENTS (1970); Mnookin & Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950 (1979).

27. See, e.g., Demsetz, *When Does the Rule of Liability Matter?*, 1 J. LEGAL STUD. 13 (1972) (discussing tort and property); Williamson, *Transaction-Cost Economics: The Governance of Contractual Relations*, 22 J.L. & ECON. 233-61 (1979) (discussing contract).

28. See, e.g., Calabresi, *Transaction Costs, Resource Allocation and Liability Rules — A Comment*, 11 J.L. & ECON. 67, 68 (1968).

29. The distinction is due to Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1 (1982), though he does not use these particular terms. This Part of the article owes a great deal to Cooter's analysis.

rectly comparable to the potential surplus from an agreement, and if they exceed that surplus no exchange can profitably occur. To illustrate, a Chevrolet dealer in Chicago may be willing to sell me a car for less than the maximum I am willing to pay, which is itself bounded by the price of similar cars in Ann Arbor where I live. If the difference between my price and the dealer's is not very large, however, it will not be worth my while to learn the dealer's price, get myself to Chicago via some other means of transportation, and drive the car back. Still, I can better justify this trouble for the savings on a car than for the savings on a minor purchase like a box of breakfast cereal.

Strategic behavior costs, in contrast, are the losses suffered because bargainers have the incentive to maximize their individual gains rather than the total surplus from exchange. Since the potential surplus can be divided among the parties in various ways, the parties may invest real resources in hopes of altering the division. Or, they may act in ways that either destroy a portion of the surplus or that risk that the bargain will fall through. Such actions may include selling or buying a lesser quantity than one really wants in order to get a better price (like the canonical monopolist), misrepresenting or withholding information about cost or value, making bluffs (and perhaps carrying them out for the sake of credibility), or extended haggling, which both takes up valuable time and delays the enjoyment of the bargain. For example, even once I reach the point of negotiating with the Chevrolet dealer, I may understate the price I am willing to pay, and the dealer may overstate the price at which she is willing to sell. This behavior is wasteful because it takes actual time and because the dealer and I, by concealing information, may fail to discover that a mutually beneficial bargain exists.

The two types of transaction costs I have identified can be distinguished on a number of functional grounds. For one, the normative terms in which each is evaluated are markedly different. The loss of an exchange due to implementation costs is not ordinarily described as inefficient, unless those costs are wastefully high. For instance, if the cost of shipping my Chevrolet from Chicago exceeds the difference between my price and the dealer's, then the exchange is not worth performing. While both the dealer and I might wish that shipping costs were lower, we would not regret the lost deal *ex post*. In contrast, if we miss an exchange by concealing information, we subsequently may wish we had acted differently, and many would view the outcome as inefficient.³⁰

30. More accurately, the appropriate definition of efficiency may be controversial when not all information is shared, as is observed by Holmström & Myerson, *Efficient and Durable Deci-*

More important from a methodological standpoint, however, implementation costs are substantially more straightforwardly and well defined; they are the concrete costs of undertaking specific activities and are in principle directly measurable. In contrast, while strategic behavior costs can result in resource expenditure, they may in some circumstances be measurable only by lost potential surplus — that is, by the absence of a bargain. Criticisms of the Coase theorem as tautological, accordingly, are better directed at strategic behavior than implementation costs. Any practical account of strategic costs will require some theory of bargaining — one that predicts under what circumstances bargainers will be able to reach a cooperative outcome.³¹ Much of the law-and-economics literature, accordingly, has concerned itself implicitly with how legal rules set the framework for bargaining.

A. *The Relation Between Substantive Legal Rules and Bargaining*

Many prominent contributions to the economic analysis of law suggest how substantive entitlements affect strategic behavior. Calabresi and Melamed's distinction between liability and property rules provides the classic illustration.³² They observed that a particular legal entitlement such as the right to undisturbed enjoyment of a given parcel of land can be protected in at least two ways. If the entitlement is protected only by a liability rule, anyone has the legal power, if not the right, to violate it provided they pay damages in compensation. In contrast, when an entitlement is protected by a property rule, no one has the power to violate it without first obtaining the permission of the holder. Such a rule might be enforced by criminal or equitable sanctions, effectively requiring that permission to make use of the entitlement be obtained in a voluntary exchange.

As Calabresi and Melamed argued, the choice among these alternatives (and a third — making the entitlement inalienable) both influences and depends on private bargaining. The different rules alter the threats and offers available to the parties. Under a liability rule, the potential infringer has the power to cut short the bargaining and force

sion Rules with Incomplete Information, 51 *ECONOMETRICA* 1799 (1983). That the dealer and I regret the outcome of our haggling is not the same as saying we view our original actions as incorrect given our positions at the time we took them. The decision to be a tough bargainer may be sensible when one does not know the opponent's reservation price, but the failure of the negotiation conveys new information initially not available.

31. Regan's well-known critique of the Coase theorem literature makes just this point. Regan, *The Problem of Social Cost Revisited*, 15 *J.L. & ECON.* 427 (1972); see also Cooter, *supra* note 29.

32. See Calabresi & Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *HARV. L. REV.* 1089 (1972).

the question of the valuation of the entitlement before some public authority. Under a property rule, the entitlement holder has the power to end the bargaining without an exchange taking place. These possibilities may alter the outcome of any negotiation that occurs. Other determinants of bargaining can influence the relative efficiency or fairness of the alternative rules. For instance, if the institutional authority charged with enforcing an entitlement has relatively poor information about the social costs and benefits of an infringement, a liability rule may be relatively inefficient. In such a situation it might be better to decentralize the allocative decision via a property rule, which allows the parties to establish the value of the entitlement by private agreement.³³

Parallel arguments can be found in the economic analyses of virtually every field of the law. Much of the debate over the economics of contract remedies, for instance, turns on the commentators' differing views of *ex post* renegotiation. Whether specific performance is more effective than money damages in promoting the efficient level of contract breach can depend upon the strategic behavior costs it induces.³⁴ One's view of the merits of the standard alternatives to measuring money damages — expectation, reliance, and restitution — will similarly be affected by one's view of bargaining. Since the efficiency of the various measures depends on the relative importance of encouraging efficient breach, reliance, or risk allocation,³⁵ by affecting the relative significance of these factors *ex post* renegotiation can alter the ranking of the various measures.³⁶

Within law and economics more generally, one's account of strategic behavior costs will typically determine one's basic normative stance. If one posits that the parties usually will find it in their interest to cooperate, one is led to what Cooter and Ulen have called the "normative Coase theorem": that the law should be structured to mini-

33. *See id.*

34. *Compare, e.g.,* Schwartz, *The Case for Specific Performance*, 89 YALE L.J. 271 (1979) (arguing that specific performance, by eliminating large liquidated damages payouts, would minimize gains of strategic behavior) with Kronman, *Specific Performance*, 45 U. CHI. L. REV. 351 (1978) (specific performance will raise cost of accepting potentially efficient alternative offers). Ulen, *supra* note 2, attempts to reconcile the two arguments. A recent technical game-theoretic analysis of the issue can be found in Lewis, Perry & Sappington, *Renegotiation and Specific Performance*, 52 LAW & CONTEMP. PROBS., Winter 1989, at 33.

35. *See, e.g.,* Polinsky, *supra* note 2; Shavell, *supra* note 2; Rogerson, *Efficient Reliance and Damage Measures for Breach of Contract*, 15 RAND J. ECON. 39 (1984).

36. *See* Craswell, *Contract Remedies, Renegotiation, and the Theory of Efficient Breach*, 61 S. CAL. L. REV. 629 (1988), and Craswell, *supra* note 2 (arguing on this logic that the importance of efficient breach has been overrated and damage rules should be designed to promote efficiency in risk allocation and in deciding whether to enter into contracts *ex ante*).

mize the impediments to private bargaining.³⁷ Given the hypothesis of cooperation, these impediments will be, in my terminology, primarily implementation costs; this suggests a relatively libertarian path for the law. In this view, infringements on the freedom of contract for some should be tolerated only to lessen transaction costs for a larger number of others.³⁸

On the other hand, if noncooperation is the rule, the social harm that would arise from the prescriptions of the normative Coase theorem could be great. Cooter, in an incisive critique of the Coasian literature, reminds readers of the very different account of self-interested behavior provided by Hobbes' *Leviathan*, and wryly suggests a "Hobbes theorem" as counterweight to the Coase theorem: since untrammelled selfishness will inevitably lead to a war of all against all in which life will be nasty, brutish, and short, legal rules should be designed to minimize the cost incurred when cooperation fails.³⁹

To determine whether a Coasian or Hobbesian approach is the better practical guide, we need to specify more carefully the bargaining likely to take place. For example, even from a Hobbesian viewpoint, one need not advocate minimizing the cost of a bargaining breakdown in the individual case, since the cost of a breakdown might influence its likelihood. If the parties knew that the consequences of failing to agree were very severe, they might act in a more cooperative fashion than otherwise.⁴⁰ The net effect on the expected costs of strategic behavior would then depend upon whether the probability of agreement increased more or less than proportionately to the loss from a breakdown.⁴¹ The result cannot be predicted without either a specific theo-

37. See generally Cooter, *supra* note 29; R. COOTER & T. ULEN, *LAW AND ECONOMICS* 99-102 (1988). I suspect this is the primary difference, rather than partisan ideology or geographical origins, separating the so-called "conservative" and "liberal" wings of law-and-economics scholarship.

38. An application of this principle would be implying a particular term in a contract in order to save the majority of contracting parties the expense of writing it in explicitly. The presumption should be rebuttable, though; if particular individuals do not want the implied term and are prepared to pay the implementation costs of eliminating it, it is efficient to allow them to do so.

39. Cooter, *supra* note 29, at 18.

40. But see Crawford, *A Theory of Disagreement in Bargaining*, 50 *ECONOMETRICA* 607 (1982); Fudenberg & Tirole, *Sequential Bargaining with Incomplete Information*, 50 *REV. ECON. STUD.* 221 (1983) (formal models in which an increase in the potential surplus from an agreement can lower the probability of a successful bargain).

41. Expected losses, of course, need not be the social minimand. If we as a society were more concerned about a small risk of a relatively large loss than about a large risk of a relatively small loss, we might want to follow Cooter's "Hobbes Theorem" and design legal rules that minimize the chances of the former. An illustration of the tradeoff is found in debates over nuclear strategy: advocates of a strong nuclear deterrent stress that the threat of mutual assured destruction reduces to nil the chances of a superpower conflict, while opponents highlight the risks should something go wrong.

retical account of, or reliable empirical evidence about, the bargaining process.

B. *The Effect of Contract Formation Rules on Bargaining*

This intellectual background makes it all the more surprising that the law of contract formation has attracted only scant attention in the law-and-economics literature. If the basic arguments of law and economics turn on the theory of bargaining, as I have argued, and if these conclusions are in fundamental dispute, we should look to the law of bargaining to help resolve the controversy. In this light, contract formation should be seen as logically prior to most if not all of the major issues in law and economics.

Both kinds of transaction costs are affected in large part by rules of contract formation and interpretation. For example, various rules prescribe the degree of thoroughness and formality required for a contract to be enforceable. Among these are the Statute of Frauds, the definiteness doctrine (which demands that the parties specify the major terms of the agreement in requisite detail)⁴² and, in important respects, the doctrine of consideration.⁴³

Such requirements directly affect the implementation costs of agreement. To satisfy the Statute of Frauds, time and effort must be expended to create an authoritative record of the agreement; papers and perhaps the parties themselves must be transported back and forth at substantial expense and delay. To satisfy the definiteness doctrine, resources must be spent negotiating specific contract language at a time where relevant information is still unknown.⁴⁴

Perhaps less obviously, rules of offer and acceptance also influence strategic behavior costs. Requiring additional negotiation before a contract becomes enforceable, for instance, changes the information available to the parties at various critical moments. Parties may acquire information about the other side's likely future behavior at the

42. The requirement of definiteness has relaxed in recent years, in part due to the influence of Uniform Commercial Code § 2-204(3), which provides that "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." U.C.C. § 2-204(3) (1989). The U.C.C. also provides various presumptive or "off-the-shelf" terms that will be implied to supplement an incomplete agreement, e.g., U.C.C. § 2-308 (1989) (place of delivery), § 2-309 (1989) (time of delivery), and § 2-310 (1989) (time and place of payment).

43. See generally Fuller, *Consideration and Form*, 41 COLUM. L. REV. 799 (1941).

44. The requirements could be cost-justified, of course, if they help reduce costs of later administering and enforcing the contract. But see Huberman & Kahn, *Limited Contract Enforcement and Strategic Renegotiation*, 78 AM. ECON. REV. 471 (1988) (where the enforcing authority has imperfect information ex post, an efficient contract may be achievable only by planning for and engaging in renegotiation).

time reliance investments must be sunk. This information will introduce certain possibilities of influencing the adversary's actions and will foreclose some others. For another example, rules requiring disclosure of private information or penalizing nondisclosure may, by reducing the cost of investigation and lowering the chance of error, improve the efficiency of negotiation.⁴⁵

Many interesting theoretical questions in this area of the law cry out for a more detailed analysis in this regard. The distinction between bilateral and unilateral contracts, for example, has perplexed generations of lawyers. When can a binding acceptance be accomplished by simply performing the actions requested by the promisor as consideration, and when is it necessary for the promisee to provide a counter-promise in order to accept?⁴⁶ While the outcomes of actual disputes turn on the distinction, the possible reasons why a promisor would want to choose one over the other and the different bargaining frameworks thereby implied are less than clear; and the efficiency consequences of a presumption in one direction or another remain an open question.

The network of rules that govern the mechanics of contracts concluded by correspondence provides a second set of examples. Suppose two individuals send each other identical offers that cross in the mail and are received simultaneously. According to black-letter law no contract is formed until one of the parties posts a responding acceptance.⁴⁷ Mechanical rules such as these commonly are justified on the ground that they establish a benchmark around which parties can plan their affairs; any more complexity would supposedly create confusion during the bargaining. This justification would be more persuasive if parties knew at the time of bargaining whether their communications would ultimately be classified as offers, acceptances, or as some other preliminary communication such as an invitation to make an offer. In

45. See generally the sources cited in *supra* note 1. But see Matthews & Postlewaite, *Quality Testing and Disclosure*, 16 RAND J. ECON. 328 (1985) (arguing that product information will decrease under a regime of mandatory disclosure).

46. See RESTATEMENT (SECOND) OF CONTRACTS § 32 (1979) ("Invitation of Promise or Performance"), § 45 (1979) ("Option Contract Created by Part Performance or Tender"), and § 62 (1979) ("Effect of Performance by Offeree Where Offer Invites Either Performance or Promise"); E. FARNSWORTH, CONTRACTS § 3.12 (1982).

47. See RESTATEMENT (SECOND) OF CONTRACTS § 23, illustration 4 (1979). There is a proliferation of complementary doctrines addressing variations on this problem. Suppose an attempt to revoke and an attempt to accept cross in the mail; the black-letter rule is that the acceptance prevails, unless the original offer specified otherwise. *Adams v. Lindsell*, 1 B. & Ald. 681, 106 Eng. Rep. 250 (K.B. 1818); see also RESTATEMENT (SECOND) OF CONTRACTS § 63 (1979). Alternatively, suppose an offeree regrets an acceptance and wires a rejection that overtakes the accepting communication? According to black-letter law the acceptance is binding on the offeree, but if the offeror relies on an apparent rejection, the offeree is estopped from enforcing the contract. See *id.*, comment c and illustration 7.

reality, however, actual communications generally are not labeled "offer" or "acceptance," and, even if they were, the label would not be legally conclusive. On the other hand, which particular mechanical rule is chosen will set the structure and sequence of bargaining, and change the time at which parties can safely rely. The choice is by no means neutral.⁴⁸

These examples illustrate the relevance of developing a practical theory of contract bargaining, both to evaluate the rules of contract formation in terms of their effect on the efficiency and fairness of exchange, and to evaluate other legal rules that set the substantive framework for negotiation. In the remainder of this article, I explain how I think this can and should be done.

III. A SKETCHY SURVEY OF THE ECONOMICS OF BARGAINING

In this Part and the next I outline the basic features of the theoretical approach currently used by most economists to analyze bargaining. The survey is necessarily incomplete; however, a basic familiarity with the approach is a prerequisite for the specific discussions of Parts V and VI. Readers conversant with the modern theory of incomplete information games may skip directly to Part V without loss of continuity.⁴⁹

Take as an illustration an archetypical bargaining problem: that of dividing a cake of fixed size and uniform quality between two parties. Each would prefer more cake to less, but the cake will go to waste unless they can agree on its division. One useful account of this problem has been described in the law-and-economics literature by Cooter,

48. A third example is furnished by the various doctrines governing renegotiation, as the opportunity to modify a contract can substantially complicate both the bargaining framework and the strategies the parties can adopt. This problem has recently attracted a fair amount of attention from economists studying the theory of bargaining. See, e.g., Crawford, *Long-Term Relationships Governed by Short-Term Contracts*, 78 AM. ECON. REV. 485 (1988); Farrell & Shapiro, *Optimal Contracts with Lock-in*, 79 AM. ECON. REV. 51 (1989); Huberman & Kahn, *supra* note 44; Tirole, *Procurement and Renegotiation*, 94 J. POL. ECON. 235 (1986). Rules that apply the consideration doctrine to limit the range of substantive exchanges possible at the modification stage, such as the common law preexisting duty rule and the rule of *Foakes v. Beer*, 9 App. Cas. 605 (H.L. 1884), alter bargaining by making it possible credibly to commit not to agree to certain modifications. For a game-theoretic analysis of the preexisting duty rule, see Graham & Peirce, *Contract Modification: An Economic Analysis of the Hold-Up Game*, LAW & CONTEMP. PROBS., Winter 1989, at 9.

49. For those wishing more complete surveys of the game-theoretic approach to bargaining, leading treatises include J. FRIEDMAN, *GAME THEORY WITH APPLICATIONS TO ECONOMICS* (1986); E. RASMUSEN, *GAMES AND INFORMATION* (1989); M. SHUBIK, *A GAME-THEORETIC APPROACH TO POLITICAL ECONOMY* (1984); and M. SHUBIK, *GAME THEORY IN THE SOCIAL SCIENCES* (1982). Shorter but excellent introductions to the field can be found in J. ELSTER, *THE CEMENT OF SOCIETY: A STUDY OF SOCIAL ORDER* 50-96 (1989); and Aumann, *Game Theory*, in 2 THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS 460-82 (1987), to which my summary is greatly indebted.

Marks, and Mnookin.⁵⁰ Suppose the parties are instructed simultaneously to submit a single, sealed demand. The demands are satisfied if it is possible to do so, and any unclaimed leftover cake is split evenly; otherwise the parties get nothing. The parties understand the rules of play and know their opponents do as well. In addition, each party has some personal characteristics, such as attitudes toward risk or the rate at which marginal utility from cake diminishes, that her opponent cannot specifically observe and that affect her optimal bargaining strategy. As a result, neither party can predict her opponent's demand with certainty, but both may be able to do so probabilistically. While this account is highly stylized, its underlying framework can be extended to more complicated environments involving multiple offers, bargaining over a variable surplus, and the like.

Consider the likely result of this process. Each party, when selecting a demand, chooses between relatively tough and relatively soft demands, knowing her opponent faces the same opportunity. A tough demand is more likely to be incompatible with the opponent's demand, and so risks a higher probability of winding up with no cake at all. A soft demand lessens the chance of disagreement, but risks unnecessarily yielding cake if the opponent has also made a soft demand. Each party will likely balance on the margin the probability of reaching a settlement against the value of getting a better settlement. Unless the parties are infinitely risk-averse, in general each will wish to live with at least some chance of disagreement. This implies that the outcome of bargaining cannot be fully Pareto efficient *ex post*.⁵¹

The Cooter-Marks-Mnookin model, of course, is not the only possible analysis of the cake-division problem or indeed of bargaining generally. Its key premises include the assumption of single and sealed offers, and the assumption that the parties lack the information needed to deduce their opponents' optimal demands with certainty; minor assumptions such as the splitting of unclaimed cake between the parties also affect the details if not the basic features of the outcome. There are various alternative accounts of bargaining available, each of which, like this one, manages to capture some aspects of actual bargaining. None of the available accounts is entirely satisfactory; and in honesty one must admit that economists do not yet understand bargaining all that well. By this I mean simply that the discipline of economics as

50. Cooter, Marks & Mnookin, *Bargaining in the Shadow of the Law: A Testable Model of Strategic Behavior*, 11 J. LEGAL STUD. 225 (1982).

51. For a formal mathematical analysis of this model, see Chatterjee & Samuelson, *Bargaining Under Incomplete Information*, 31 OPERATIONS RES. 835 (1983). Myerson & Satterthwaite, *supra* note 7, show that the sealed-bid procedure is as efficient as any that can be designed given the informational constraints of the problem.

yet possesses no canonical theory of bargaining that can be taken off the shelf and applied to a variety of specific problems, in the way that the model of perfect competition is widely applied to market behavior. Although bargaining is fundamental to many important economic phenomena entirely outside law and economics — such as bilateral monopoly, labor-management relations, and the theory of the firm — economists working on each of these problems will typically devise a specific model of strategic behavior for the particular purpose at hand.

Despite the absence of a consensus theory of bargaining, economists generally do agree on the ways in which research about bargaining should proceed. Most existing work on the topic falls into one of two basic paradigms: the cooperative (or axiomatic) approach and the noncooperative approach. The cooperative paradigm has received attention primarily from mathematical economists and focuses on bargainers as a group more than as individuals.⁵² The noncooperative paradigm, conversely, of which the Cooter-Marks-Mnookin model is an example, is distinguished by its attempt to describe individually rational behavior in situations of mutual recognized dependence; that is, when the players understand that their actions both affect and are affected by the actions of others. Because the noncooperative paradigm, like neoclassical economics as a whole, is clearly grounded in the postulate of individual utility maximization, it has been substantially more influential than has the cooperative approach among applied economists.⁵³ Furthermore, since the noncooperative approach usually is less abstract and is more closely tied to the particular strategic environment at hand, it is better suited to the investigation of actual institutions affecting bargaining. For these reasons, it is the approach

52. The resulting axiomatic analyses typically have two objectives: First, they attempt to derive a solution to the bargaining problem by defining a set of normatively appealing features — the axioms — that any solution should have. Typical axioms include efficiency and the invariance of the outcome to rescaling of quantitative measures. Second, they attempt logically to deduce which of the possible outcomes satisfy these axioms. Kenneth Arrow's well-known "impossibility theorem," which has recently gained attention from legal scholars, represents this paradigm if we interpret it as addressing the overall bargain implicit in the social contract. In this context, Arrow's theorem states that none of the possible outcomes of the bargaining can satisfy what he saw as a minimally acceptable set of axioms. See K. ARROW, *SOCIAL CHOICE AND INDIVIDUAL VALUES* (1963). A general but technical introduction to the axiomatic approach is found in Harsanyi, *Bargaining*, in 1 *THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS*, *supra* note 49, at 190-95. One frequently cited survey of research in the area is A. ROTH, *AXIOMATIC MODELS OF BARGAINING* (1985).

53. As applied economists have increasingly turned to game theory in recent years to help analyze a wide selection of economic issues, pure game theorists have begun to devote greater efforts to the unification of the two paradigms. For a leading example of this research program, which seeks to build noncooperative models that yield particular axiomatic solutions as their equilibria, see Binmore, Rubinstein & Wolinsky, *The Nash Bargaining Solution in Economic Modeling*, 17 *RAND J. ECON.* 176 (1986).

I follow in this article.⁵⁴

Several points require clarification. It is customary when constructing game-theoretic models to make a variety of standard assumptions that result in a fairly stylized analysis. Rationality, in particular, is generally taken to mean that the participants (or “players”) know the nature of the environment in which they operate. This need not imply they have information about every relevant aspect of the situation, but it does mean that they are aware of the extent to which they are ignorant. Furthermore, it is generally assumed that the players’ computational abilities are unlimited; they can reason through an arbitrary number of logical steps if necessary. In such a context, individual maximization requires each party to select an optimal *strategy* — a complete plan of actions to be taken under all relevant contingencies.

A player’s optimal strategy will depend on the strategies chosen by other players; in this sense all players’ strategies are interdependent. There generally exist some configurations of strategies, however, such that each individual party’s strategy is an optimal response to the set of strategies chosen by all the others. Such a set of choices is commonly felt to be a plausible outcome of the game, since no individual player has the incentive unilaterally to change her behavior so long as she assumes that all other players reason similarly. This situation is referred to as a *Nash equilibrium*, after the mathematical economist John Nash, who argued that unprofitability of individual deviations should be a necessary condition for an outcome of a game to be considered stable.⁵⁵

The focus on Nash equilibria has been a standard feature of game-theoretic analyses for almost forty years and has found a number of

54. Much of the recent economic literature on litigation settlement relies on the non-cooperative paradigm. See, e.g., Bebchuk, *Litigation and Settlement Under Imperfect Information*, 15 RAND J. ECON. 404 (1984); Rosenberg & Shavell, *A Model in Which Suits Are Brought for Their Nuisance Value*, 5 INTL. REV. L. & ECON. 3 (1985). In contrast, many economic articles on civil procedure that presuppose bargaining as the background to litigation have implicitly adopted the cooperative approach. See, e.g., Miller, *An Economic Analysis of Rule 68*, 15 J. LEGAL STUD. 93 (1986); Priest & Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984). The cooperative approach can, as these articles demonstrate, be useful if one wants a stylized off-the-shelf model to help study the effects of some other legal rule — a sensible course of action so that research on other questions does not come to a complete halt while awaiting a satisfactory noncooperative account of bargaining.

55. See Nash, *Non-Cooperative Games*, 54 ANNALS OF MATHEMATICS 286 (1951). It may be that given the opponents’ strategies, alternative strategies are equally good for a player. In this case Nash equilibrium requires only that each player’s selection be weakly optimal: that is, one of the set of equally good options. For a general introduction to the Nash criterion, as well as a discussion of some of the refinements that have been suggested for it, see Kreps, *Nash Equilibrium*, in III THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS 584 (1987).

applications in legal scholarship over the decades.⁵⁶ But modern research on bargaining has revealed that additional theoretical refinements, concerning information and the timing of the parties' strategies, need to be imposed on bargaining models if useful results are to be obtained. Without these modifications, many games — especially those in which the parties lack full information about their situation — have multiple Nash equilibria.

The most important of these refinements arise in strategic interactions that unfold over a period of time as opposed to instantaneously; these types of interactions are commonly referred to in the formal literature as *sequential* or *extensive games*. Rationality in sequential games, it is usually felt, entails an additional requirement beyond the unprofitability of individual deviation, which I refer to as *sequential rationality*. A rigorous definition of this concept turns out to be fairly subtle, but the intuitive idea is straightforward. A given strategy or sequence of decisions is sequentially rational if and only if each possible shorter sequence of decisions contained within the strategy as a whole is itself an optimal strategy when evaluated from the later vantage point at which the subsequence begins.

The practical meaning of sequential rationality is that no threat can affect behavior unless the threat is credible. Alternatively, a promise to take some action in the future will not be believed if it is common knowledge that at the time of obligation it will not be in the promisor's interest to carry out the promise. "Common knowledge" in this context has a technical meaning; it implies that the opposing party knows that carrying out the threat is not in the threatener's interest, that the threatener knows that the opponent knows this, that the opponent knows that the threatener knows that the opponent knows, and so on.

An illustration of this is provided by the finitely repeated version of the familiar prisoners' dilemma game. In the one-shot prisoners' dilemma, individually rational behavior by the players leads to a collectively undesirable outcome. Those finding this outcome unappealing have often suggested that repetition of the game would allow the players to escape the dilemma, since cooperation in earlier rounds could be rewarded in kind in later rounds. But if the repetition is only for a finite number of rounds, the proposed solution is not sequentially ra-

56. See, e.g., Ayres, *How Cartels Punish: A Structural Theory of Self-Enforcing Collusion*, 87 COLUM. L. REV. 295 (1987) (applying the concept to antitrust); Birmingham, *Legal and Moral Duty in Game Theory: Common Law Contract and Chinese Analogies*, 18 BUFFALO L. REV. 99 (1969) (applying the concept to contracts); Wiley, *Antitrust and Core Theory*, 54 U. CHI. L. REV. 556 (1987) (antitrust).

tional.⁵⁷ For in the last round, which from the ex post perspective is equivalent to the one-shot game, there can be no later reward to cooperation. The players will therefore be unable to restrain themselves from acting selfishly in that round — and this is common knowledge between them. As a result, cooperation in the next-to-last round yields no reward either, leading the players to act selfishly in that round also. And so on, as the chain of reasoning unravels all the way back to the first round of play.⁵⁸

If each party's strategy is a sequentially rational response to everyone else's strategy, the resulting configuration is referred to as a *sequential equilibrium*, or alternatively (if the game is one of full information) as a *subgame perfect equilibrium*. As David Kreps has explained: "If at any point in an extensive game, all players agree on what has transpired, then 'what remains' is, by itself, an extensive game. We might require that, in such circumstances, players expect that the agreement for this subgame constitutes a Nash equilibrium for the subgame."⁵⁹

A simple application of the difference between Nash and subgame perfect equilibrium is found in the example of an immaterial breach of contract.⁶⁰ Suppose a seller has substantially performed a contract to sell, but that the goods delivered do not precisely accord to the contract description. Since the goods as delivered are worth slightly less than the goods as promised, in theory the buyer may recover damages equal to the difference in value.⁶¹ Although the potential damages are less than the anticipated cost of bringing suit, the buyer may nonetheless threaten to sue in hopes of inducing the seller to cure the defective performance. If the buyer actually sues, however, both the buyer and seller will be worse off.

Suppose the sequence of events requires the seller to decide whether to cure before the buyer decides whether to bring suit. In this case, the seller's possible strategies are to cure or not to cure, and the

57. See D. LUCE & H. RAIFFA, *GAMES AND DECISIONS* 98-99 (1957).

58. Repetition of the prisoners' dilemma can support cooperation if the players are uncertain when the game will end, or if the repetition goes on infinitely, or if there is some uncertainty whether one of the players actually prefers cooperation for its own sake. For further details, see E. RASMUSEN, *supra* note 49, at 88-96.

59. Kreps, *supra* note 55, at 586. Actually, there is a minor technical distinction, unimportant for our purposes, between the concepts of sequential equilibrium and subgame perfect equilibrium. See *id.* at 586-87.

60. The example is taken from Leff, *Injury, Ignorance and Spite — The Dynamics of Coercive Collection*, 80 *YALE L.J.* 1 (1970).

61. According to U.C.C. § 2-714(1) (1987): "Where the buyer has accepted goods and given notification . . . he may recover as damages for any non-conformity of tender the loss resulting in the ordinary course of events from the seller's breach as determined in any manner which is reasonable."

buyer's possible strategies (which become relevant only if the seller does not cure) are to carry out the threat to sue or not to carry out the threat. One possible outcome is for the buyer to resolve to carry out his threat, and for the seller to cure. This is technically a Nash equilibrium, because neither wants to deviate from his equilibrium strategy given that the other does not. If the buyer will sue absent a cure, the seller prefers to cure; and if the seller is going to cure, the buyer loses nothing from his threat to sue.

This game has a second and more plausible Nash equilibrium, however, which is for the seller not to cure and the buyer not to sue. Neither wants to switch strategies given the other's strategy; if the buyer is not going to sue, the seller does not want to cure, and if the seller is not going to cure, the buyer does not want to sue. Only this second outcome is a sequential equilibrium. The problem with the first equilibrium is that the buyer's threat to sue is not credible; once the breach has occurred, it no longer pays to carry out the threat. Furthermore, because the seller knows this (more precisely, because it is common knowledge), she can safely decide not to cure.

The sequential equilibrium concept better captures our intuitions about the outcome of this game — which are that cure is unlikely if the buyer cannot commit in advance to sue. That is not to say that buyers do not have remedies other than suit with which to encourage a perfect tender. They may appeal to moral suasion, promises of future business, or the like. Still, the most effective means of enforcement likely will be those that are credible — or in game-theoretic terms, sequentially rational — such as not dealing with an offending party in the future.

These examples demonstrate the method of *backwards induction* for finding the sequential equilibria of games with full information. One first looks to every decision that is the last in some possible sequence of decisions (in this case, the buyer's decision whether to sue). For each of these terminal stages, one determines the optimal choice for the player whose turn it would be to decide, were that stage of the sequence ever to be reached. This completed, one then determines what the optimal choice would be in each possible penultimate stage, given the choices that can be expected at the terminal stage. One can then proceed to the antepenultimate stage and reason backwards through the entire sequence of decisions, eventually reaching a sequential equilibrium for the game as a whole. Through this process, for example, cooperation unraveled in the finitely repeated prisoners' dilemma game.

The method of backwards induction is applicable only in games of

full information, where the actions taken and the parties' payoffs are common knowledge. The full information assumption may not be completely realistic in every situation, but in some it may be an acceptable approximation. For instance, the simplest case of a full-information bargaining game is presented by single-offer negotiation, when each side knows the other's assessment of the bottom line. Imagine I own a book that I value at \$5 and that you value at \$15, that these valuations are common knowledge, and that negotiation takes the form of a single take-it-or-leave-it offer. In this example, sequential equilibrium implies that the party lucky enough to be in the position of the offeror gets virtually the entire surplus from exchange. If I am the offeror, I do best to offer to sell for \$14.99, which I know you will accept; and if you are offeror, you do best to offer to buy for \$5.01, which you know I will accept.⁶²

It is frequently useful to present bargaining games diagrammatically; this representation is often called the *extensive form* of a game. The extensive form, or tree diagram, specifies the sequence in which the players act, what they know when they move, the role of any chance occurrences, and the payoff to each player at the end of each possible combination of choices. It is a generalization of the decision tree diagram widely taught in schools of business administration, in which a single decisionmaker plots out the various consequences of all her possible choices. A game tree with multiple players is similar, except that each branch specifies whose turn it is to act and what that actor knows. The method of backwards induction can be described metaphorically as starting with the endmost twigs on a tree diagram and successively pruning unused branches until one reaches the main trunk.

The tree diagram for the take-it-or-leave-it game just described is shown in Figure 1. The temporal sequence proceeds downwards from the top of the diagram; first the seller decides on an offer, and only then does the buyer have an opportunity to respond. At the end of each terminal branch, an ordered pair — two quantities in parentheses, separated by a comma — indicates the net payoffs to both sides.

62. It should be evident from this example that the assumption of full information rarely will be satisfied in practice. In reality, it is difficult for one party to know the other's valuation of relevant outcomes with precision, especially if one allows the possibility of nonmonetary or psychic aspects of value. Furthermore, willingness to engage in exchange may depend upon one's view of the fairness of the transaction, so that private valuations and the price paid may be interdependent. See Kahneman, Knetsch & Thaler, *Fairness as a Constraint on Profit Seeking: Entitlements in the Market*, 76 AM. ECON. REV. 728 (1986) (discussing evidence of this phenomenon in experimental settings). Accordingly, it is probably a good idea even in single-offer negotiation for the offeror to leave her opponent with a nontrivial share of the surplus, while still finding out as much as feasible about the opponent's bottom line.

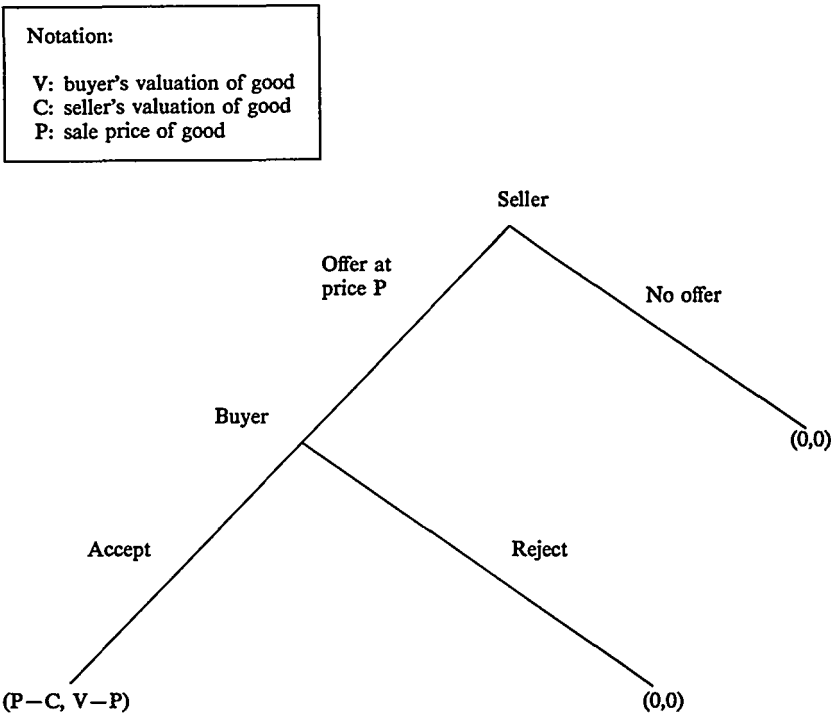


Figure 1. Take-it-or-leave-it offer

The first quantity in the ordered pair refers to the seller's net gain or loss, and the second quantity refers to the buyer's net gain or loss.

The take-it-or-leave-it game illustrates an essential point about sequential games: a change in the order of events can substantially alter the outcome. Clearly it matters to the outcome which party gets to make the offer. More technically, the order of events determines which of a game's multiple Nash equilibria are sequential equilibria. Recall the immaterial contract breach example discussed earlier. The unique sequential equilibrium was for the seller not to cure and the buyer not to sue. Now suppose instead that the buyer could commit to sue before the seller decides whether to cure, perhaps by hiring a particularly aggressive lawyer on retainer. In this case, the buyer's threat to sue in event of an immaterial breach will become credible. Since the seller then believes the threat, she will choose to make a perfect tender. And given that perfect tender is rational for the seller once the buyer has committed to sue, the buyer will want to commit to sue so long as the cost of commitment is less than the value of ensuring a perfect tender.

One could view the opportunity to precommit as adding an additional stage to the sequence, and could imagine continuing with additional preceding stages: the seller might precommit to spend a large amount in litigation, guaranteeing that even if the buyer precommits, both buyer and seller will lose money. If the seller can precommit before the buyer has the chance to, the buyer's threat to precommit is no longer credible, and vice versa. In this competition, having the first move confers great advantage, just as being the offeror does in single-offer bargaining.

In many actual bargaining environments, though, the full-information assumption is unrealistic. In order to get an accurate description of the strategic structure, what information each player has and when she has it must also be specified. This turns the game into one of *incomplete* or *asymmetric information*. If one specifies the informational structure carefully, however, and if one assumes that parties understand the extent to which their information is incomplete, sequential equilibria for these games can be found, using techniques that have only recently come into wide use among applied economists.⁶³

While the methods for solving incomplete information games are technical, their underlying principles are intuitively straightforward. Even when information is incomplete, the players still may have some more or less reliable sense of the possible situations and types of opponents they might be facing. Similarly, each player will have some more or less accurate beliefs regarding the relative likelihood of each of these alternatives. Following the approach of modern decision theory, each player's beliefs can be modeled as if they satisfied the requirements for a subjective probability distribution over the relevant domain of possibilities. Each player is then viewed as making an optimal choice under conditions of uncertainty. She does this by maximizing her expected level of welfare given her beliefs about the relative probability of relevant events and her attitudes toward risk. Furthermore, her beliefs satisfy a requirement I call *Bayesian rationality*: she updates her beliefs about relative probabilities at every point along the way, drawing optimal inferences about her opponents' private information from their observable actions according to Bayes' rule of poste-

63. The theoretical innovations necessary to derive optimal strategies in incomplete information games were not developed until the late 1960s and 1970s. The seminal contributions generally are regarded to be those of Harsanyi, *Games with Incomplete Information Played by "Bayesian" Players* (pts. 1-3), 14 *MGMT. SCI.* 159, 320, 486 (1967-1968); and Selten, *Reexamination of the Perfectness Concept for Equilibrium in Extensive Games*, 4 *INTL. J. GAME THEORY* 25 (1975). Wide application of the theory did not arise until the 1980s, following the work of Kreps and Wilson and of Milgrom and Roberts on predatory pricing. See, e.g., Kreps & Wilson, *Reputation and Imperfect Information*, 27 *J. ECON. THEORY* 253 (1982); and Milgrom & Roberts, *Limit Pricing and Entry under Incomplete Information*, 50 *ECONOMETRICA* 443 (1982).

rior probabilities.⁶⁴

The importance of subjective beliefs for the outcome of incomplete information games requires an additional restriction on the equilibrium. The most generally accepted concept of equilibrium under these circumstances is the *Bayesian-Nash equilibrium*, in which the players' beliefs about the expected frequency of relevant events are accurate on average, though not in every instance. In particular, their beliefs about the likelihood of other players' actions correspond to the actual frequencies with which their opponents choose those actions in equilibrium.

This requirement is sometimes referred to as the *rational expectations* assumption, and has been the subject of some controversy in the literature. Its appeal stems from the following argument: in a setting of imperfect information, one would expect that the players' subjective probability beliefs evolve from their own past experience in the market, or from some communication with other market participants. Yet, for the outcome of strategic behavior to be stable, the players' probability beliefs must also remain stable. If individual probability beliefs diverged substantially from actual population frequencies, utility-maximizing actors would find it in their interest to update their estimates from their own experience and from market reputations. Accordingly, the original divergence between probability beliefs and actual frequencies would not be stable in the long run and is not a plausible candidate for equilibrium.⁶⁵

Even if one finds this line of argument persuasive, the amount of time and learning needed to reach a Bayesian-Nash equilibrium is an empirical question. If the necessary time is large then an equilibrium analysis may not be appropriate for either descriptive or normative purposes.⁶⁶ Nonetheless, the Bayesian-Nash equilibrium provides a useful benchmark that may illuminate, if not approximate, the behavior of individuals in environments where they must take actions based on their subjective beliefs about an uncertain reality.

64. On the economic theory of choice under uncertainty, see generally H. RAIFFA, *DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY* (1968). For a discussion of Bayes' rule, including philosophical arguments for and against its application, see Good, *Subjective Probability*, in IV *THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS*, *supra* note 49, at 537-42. Issues related to the application of Bayes' rule should be familiar to scholars and teachers of the law of evidence. See generally Lempert, *The New Evidence Scholarship: Analyzing The Process of Proof*, 66 B.U. L. REV. 439 (1986).

65. But see, for example, the classic article by Tversky & Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCIENCE 1124 (1974).

66. A discussion and defense of the rational expectation assumption may be found in Schwartz & Wilde, *Imperfect Information in Markets for Contract Terms: The Examples of Warranties and Security Interests*, 69 VA. L. REV. 1387 (1983); see also Cooter, Marks & Mnookin, *supra* note 50, at 231-33.

To summarize: in this Part, I have described the primary game-theoretic tools in common use among economists, and how economists have used these tools to study the bargaining problem. Although the literature on bargaining is a burgeoning one, and while there is substantial controversy regarding the direction of its future development, there are no good alternatives to game theory if one wishes to investigate strategic incentives using the paradigm of rational choice. Accordingly, I argue that the limited understanding now available is worth applying for the insight it can provide. Such insight cannot be achieved, however, by just picking up a particular game-theoretic model and plugging a specific institution into it. Before using game theory to model real problems, its limitations must be carefully evaluated. Accordingly, the next Part attempts to outline both the major shortcomings of modern game theory and the main practical problems involved in applying it. This helps cultivate the informed judgment needed to apply the theory to the complicated and often confusing contexts in which actual bargaining takes place.

IV. APPLICATION OF THE GAME-THEORETIC APPROACH: SOME CAVEATS

Which actions are individually rational in any particular strategic setting depends critically on a variety of determinants, including the range of individual characteristics and preferences of the participants, the sequence in which players can make binding commitments, and the players' information about their opponents' preferences and about the opponents' prior and contemporaneous decisions. Specifying all the relevant factors for any actual institutional process is a formidable task. As with any attempt to use abstract theory for pragmatic purposes, we must devise a model of the reality we are trying to explain. The goal of modeling is to dispense with the more inessential features of reality in order to develop a tractable description of its more important aspects.⁶⁷ Constructing a useful model requires not just technical skill in symbolic or even verbal manipulation, but sophisticated judgment in selecting which aspects of a complex reality to include. Descriptive accuracy must be balanced against parsimony and elegance. The enterprise is in significant part an aesthetic one.⁶⁸

67. While the modeling approach has been criticized by some more traditional legal scholars as uselessly abstract, such critics fail to understand that the filtering out of complexities inheres in any heuristic reasoning, either verbal or symbolic. For sympathetic yet self-critical introductions to the methodology of modeling, see, for example, E. STOKEY & R. ZECKHAUSER, A PRIMER FOR POLICY ANALYSIS 8-21 (1978); Gibbard & Varian, *Economic Models*, 75 J. PHIL. 664 (1978).

68. As Donald McCloskey has observed, a good model is like a good metaphor. D. MC-

The demands of modeling make applying game theory to specific problems particularly challenging. In general, game-theoretic models suffer from a lack of robustness compared with other economic models in common use.⁶⁹ By this I mean that their conclusions are highly sensitive to the particular specifications chosen. In addition, the relationship between premise and conclusion is often discontinuous, so that in game-theoretic models — especially when incomplete information and timing are important to the strategic structure — approximately correct assumptions need not lead to approximately correct predictions.

This differs from the study of market behavior generally. A major reason that the model of perfect competition has been influential among economists, for example, is that it is robust with respect to variations in its specifications. Economists' confidence in the model does not stem solely from the theorems they have developed that hold that perfectly competitive markets are Pareto efficient. It also stems in important part from informal arguments, as well as the occasional so-called "limit theorem," showing that almost perfectly competitive markets are, in a certain well-defined sense, almost Pareto efficient.⁷⁰ Bargaining theory contains few limit theorems, so that each assumption can thus pose subtle yet critical modeling choices. As a result, judgment, common sense, and a sensitive attention to institutional detail loom much larger here than they do in other fields of applied economics.

A. *Selecting the Best Formal Model*

Correctly identifying all the relevant players is the first critical step to building a useful model. Market structure may determine whether offers come from many buyers and sellers or just a few. It also may affect the informational background, since competition from similarly situated individuals may provide incentives for players to reveal what they would otherwise not. Whether parties bargain themselves or have subordinates negotiate on their behalf also affects the outcome,

CLOSKEY, *THE RHETORIC OF ECONOMICS* 74-83 (1985). For the interested reader, McCloskey's book provides a particularly thoughtful discussion of the aesthetics of modeling.

69. I am not going to be able to provide an exhaustive critique of the game-theoretic approach; instead, my purpose here is to warn newcomers of the sorts of problems typically encountered. For fuller discussions, see the sources listed at *supra* note 49. A more fundamental critique of the entire enterprise has been put forward by Binmore, *Modeling Rational Players*, (pt. 1), 3 *ECON. & PHIL.* 179 (1987); and Binmore, *Modeling Rational Players*, (pt. 2), 4 *ECON. & PHIL.* 9 (1988) (standard approach to rationality logically unattainable in theory; recommends modeling rational players as finite automata).

70. See, for example, J. TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 226-28 (1988), and sources cited therein.

since differences between the interests of principals and their agents may augment the strategies available — a phenomenon familiar to any attorney who has ever tried to settle a lawsuit. The creation of the original arrangement between principal and bargaining agent also could itself be viewed as part of the game.⁷¹

Second, intelligent modeling will require that the sequence of choices be specified carefully, since a formal model will be unreliable if it arbitrarily excludes available strategies players might wish to adopt under the right circumstances. Much can turn on whether the bargaining must end by some determinate date or time, or whether it can in principle continue indefinitely. Similarly, it may matter a great deal whether the parties expect to repeat their negotiation at some point in the future. The opportunity for additional rounds of play may encourage the parties to cooperate, since uncooperative behavior now may be punished later. Opportunities to develop reputations for future use substantially enriches the array of possible rewards and punishments that the parties can bring to bear.⁷² As even the simple models of the previous Part demonstrated, the omission of opportunities to commit to later actions, or even to make investments that alter the payoffs from later actions, can materially alter a model's predictions. The opportunity to reconsider decisions after additional information becomes available, or even to delay, can substantially expand the parties' strategic possibilities. It is not difficult to construct additional variations on this theme.

Third, specifying the informational setting of negotiation is essential and extremely delicate. If the structure and sequence of information is imprecisely formulated, the model's implications will be unreliable and perhaps incoherent.⁷³ For instance, the capacity of one player's earlier action to influence another's depends on the later player knowing about the earlier's decision. If neither party learns the result of the other's action until after making her own choice, the two decisions are effectively simultaneous for strategic purposes, regardless of their actual temporal sequence.

71. One can imagine that both the client's private information about and the attorney's internal assessments of the merits of the client's position would influence the contractual arrangement they select — and that the form and content of the arrangement, if publicly verifiable, could signal this information to the opponent.

72. Compare Galanter, *Why the "Haves" Come Out Ahead: Speculations on the Limits of Legal Change*, 9 LAW & SOC. REV. 95, 97 (1974) (stressing distinction between "one-shot" and "repeat" players in litigation).

73. The philosophical paradox known as "Newcomb's problem" provides a classic illustration of the confusion that can arise when the informational structure of a game is not precisely described. See, e.g., Nozick, *Newcomb's Problem and Two Principles of Choice*, in *ESSAYS IN HONOR OF CARL G. HEMPEL* 114 (N. Rescher ed. 1969).

The predictions of bargaining models can also differ depending upon whether the incomplete information is taken to be one-sided (only one party has information that the other does not) or two-sided (each party has some information that the other does not). If the incomplete information is one-sided, the outcome can vary depending upon whether the informed or uninformed party makes the first move. If the informed party moves first, she risks that her actions may partially reveal her information, since individuals with different information generally can be expected to prefer different strategies. For this reason, she might imitate the optimal strategy of someone with different information or characteristics from her own — that is, to bluff — in order to mislead her opponent. Alternatively, she might take an otherwise irrational action in order to distinguish herself from an imitator. Such phenomena are typically referred to in the economic literature as *signaling*.⁷⁴ In contrast, when the uninformed party makes the first move, her problem is typically referred to as one of *screening* (as when a seller offers a menu of contracts to a buyer of unknown characteristics, in hopes of separating out high-valuation buyers from the low-valuation buyers). When incomplete information is two-sided, bargaining can incorporate both signaling and screening.⁷⁵

The bargaining models presented in the following Parts of this article will present difficulties of all these sorts, and may therefore ultimately require us, in the course of explaining the effects of the rules of offer and acceptance, to consider aspects of contracting seemingly far removed from the initial formation of agreement. While one might have hoped that an analysis of offer and acceptance rules could be confined to bargaining at the formation stage alone, the contract's ultimate enforceability and the availability of remedies for breach will influence the earlier negotiations. For this reason, ironically, more orthodox legal scholars may ultimately find themselves more comfortable with the game-theoretic approach than with the price-theoretic techniques that so far have been the primary methodology of law and economics. In a sense, game theory lends support to the traditional maxim that the law is a seamless web — that all that does happen depends on all that might have happened. Nevertheless, such a tru-

74. Various phenomena arising in actual contracting may be motivated as signaling behavior. A possible example is liquidated damages in excess of the promisee's expectation, which might be adopted to signal the promisor's private information that the probability of breach will be low. The institution of secured credit also has been explained in this way. See, e.g., Schwartz, *A Theory of Loan Priorities*, 18 J. LEGAL STUD. 209 (1989).

75. See, e.g., Ordovery & Rubinstein, *A Sequential Concession Game with Asymmetric Information*, 101 Q.J. ECON. 879 (1986) (haggling arises as each party delays the bargain in simultaneous attempt to signal the low value she places on it and to screen the opponent's value).

ism, while instructive, is not any more helpful to the practice of modeling than it is to the practice of constructing particular doctrinal arguments. Attempting to consider all possible eventualities just makes it impossible for us to focus attention on any issue in particular. We simply will have to exercise pragmatic judgment in choosing a model and interpreting the results we derive from it.

B. *Limitations of the Game-Theoretic Approach*

In addition to those considerations making it difficult to select among game-theoretic models, the framework as a whole is vulnerable to more basic criticisms that question the degree of rationality and coordination it requires of the participants. One such objection challenges the descriptive usefulness of the concept of equilibrium. The appeal of the Nash equilibrium stems from its stability once established, since no single player finds it in her interest to deviate from it. One might legitimately ask, however, how such an outcome is ever supposed to be reached in the first place.

A common response is that if the game were played repeatedly, the players would through some process of adjustment converge to an equilibrium. This response, however, both requires empirical defense and suffers from a theoretical difficulty. If the parties understand at the outset that the game is to be repeated, then the situation should be viewed not as many individual games but as a single long one. The equilibria of such a repeated game, for the reasons previously discussed, may be very different from the equilibria of the individual one-shot games that make up its rounds.⁷⁶

A second and perhaps more appealing response is provided by the notion of common knowledge. If all parties know the structure of the game, and all know that the others know this (and so on), then each should be able to deduce not just her own optimal strategy but also the optimal strategies of the other players. It follows that the individual players could calculate the Nash equilibrium themselves. Because they know that all the others can do the same, they should realize that it is the only sensible result.

Readers skeptical of formal models may question whether actual bargainers are capable of such an intricate chain of reasoning. For relatively simple games, however, the Nash equilibrium may be sufficiently obvious and appealing that parties will find it. There is in fact empirical evidence suggesting that experimental subjects participating

76. See generally Fudenberg & Maskin, *The Folk Theorem in Repeated Games with Discounting or with Incomplete Information*, 54 *ECONOMETRICA* 533-54 (1986).

in supervised bargaining situations do manage to reach Nash equilibria.⁷⁷ The bargaining games I have been discussing, however, are strategically richer than the typical laboratory experiment, and generally have multiple equilibria. The existence of multiple equilibria raises significant theoretical difficulties for the establishment of any particular one. It is not clear how parties could converge on a given equilibrium outcome through simultaneous deduction, because no individual player can be sure that the others are aiming for the same equilibrium that she is. Moreover, even if players could coordinate their strategies and select a single equilibrium, it is unclear how to predict which one they will choose.⁷⁸

A more fundamental objection is that actual strategic situations are sufficiently complex that one may lack confidence in the ability of human players even to calculate their own optimal strategies. In the words of one eminent game theorist:

For a long time it has been felt that both game and economic theory assume too much rationality. For example, the hundred-times repeated prisoners' dilemma has some 2^{2100} pure strategies; all the books in the world are not large enough to write this number even once in decimal notation. There is no practical way in which all these strategies can be considered truly available to the players. On the face of it, this would seem to render statements about the equilibrium points of such games . . . less compelling, since it is quite possible that if the sets of strategies were suitably restricted, the equilibria would change drastically.⁷⁹

While limited human capacity to consider all possible strategies may render implausible the predictions of overly complicated models, however, it need not undercut the game-theoretic approach as a whole. The fact that human rationality is bounded, rather, should increase the usefulness of simple models of bargaining as opposed to complex ones. So long as our own understanding of the strategic possibilities of a given situation accords substantially with that of the actual players, the strategies we exclude from the model may not be of empirical importance. Whether this is in fact the case, of course, depends upon our skill and judgment in capturing the critical elements of actual institutions. Models of bargaining will be most useful if they are built on insights arising from practical experience.⁸⁰

77. See, e.g., Plott, *Industrial Organization Theory and Experimental Economics*, 20 J. ECON. LIT. 1485, 1485-93 (1982).

78. The multiple equilibrium problem has commanded substantial attention in the theoretical literature on game theory in recent years, motivating a vigorous debate that centers around a variety of proposed conceptual refinements designed to narrow down the set of possible equilibria. So far, however, it is generally agreed that the problem has not yet been satisfactorily resolved. See Kreps, *supra* note 55.

79. Aumann, *supra* note 49, at 478.

80. Some scholars have conjectured that the explicit incorporation of bounded rationality

I hope the foregoing catalog of cautions has not persuaded the reader that the game-theoretic approach is so fraught with difficulty that the project is not worth undertaking. My intention is, after all, to argue that we should devote more attention to understanding bargaining, and I think the game-theoretic approach is better than any other one currently available. I have simply tried to set forth the factors that must be considered if this project is to be carried out with judgment and prudence. I suspect that readers will find the project to be more sensible and appealing after examining some concrete applications.

Accordingly, the next two Parts are primarily intended as illustrative. Given the theoretical limitations I have described, it would be audacious to make strong policy prescriptions on the basis of the analyses presented here. Instead, I examine in more detail two particular contract doctrines to demonstrate the research program I have in mind, as well as the types of insights that might emerge from it. In the next Part, I analyze the doctrine of acceptance by silence, using a simple full-information model of bargaining that can be analyzed using the principle of backwards induction. Following this, in Part VI, I present a more sophisticated bargaining model that allows for incomplete information, and use it to analyze the effects of imposing a duty to read the fine print in standardized form contracts. The chief purpose of this latter example is to illustrate the importance of specifying the strategic structure of bargaining in careful detail.

V. A FULL INFORMATION MODEL: ACCEPTANCE BY SILENCE

In this Part, I consider the rule of acceptance by silence to show how even simple bargaining models premised on full information can help illuminate the law of offer and acceptance. While I do not mean to claim that imperfect information is unimportant in this setting, I want to begin with a straightforward example of the research program I advocate. The purpose is less to provide a realistically useful analysis of the rule, which was selected in large part to illustrate the technique, than to show how an analysis might be possible. Nonetheless, the full-information analysis can reveal important strategic features of existing legal doctrine.⁸¹

will ultimately make game-theoretic models more robust and will eliminate implausible equilibria that cannot be ruled out from the viewpoint of perfect rationality. See, e.g., Binmore, *supra* note 69.

81. Some of the considerations that would arise in a fuller analysis will be alluded to in the discussion below. For a more thorough and technical investigation of the doctrine, see A. Katz, *Transaction Costs and the Legal Mechanics of Contract Formation: When Should Silence in the Face of an Offer Be Construed as Acceptance?* (1990) (manuscript available from the author).

A. *The Doctrinal Background*

It is a basic feature of Anglo-American contract law that the person who proposes an exchange has substantial control over the structure of the bargaining — a fact captured in the maxim that “the offeror is master of his offer.” The theoretical justification for this stems from the principle of freedom of contract. Since the offer, by its terms, defines the proposed exchange both in form and in content, the offeror *a fortiori* should have the power to specify what sort of response counts as a valid acceptance. According to the *Restatement*: “Acceptance of an offer is a manifestation of assent to the terms thereof made by the offeree in a manner invited or required by the offer.”⁸²

For instance, an offeror is free to require that acceptance take place by a given date, be communicated according to a particular medium such as telex, or be written on a certain shape and size of paper. The offeror also has power to countermand certain of the standard common law presumptions that govern contract formation — for example, by specifying that any acceptance will not be effective until personally received by the offeror.⁸³ The offeror’s control over the form of acceptance is limited, however, by various rules designed either to protect the offeree’s contractual freedom or other social objectives.

One important limit on the offeror’s power to set the terms of the bargain arises when the offeror wishes to specify that the offeree need do nothing at all in order to accept. For instance, a seller of goods might send a letter stating that a shipment of merchandise will be sent in ten days unless the recipient sends a notice of objection. If such an offer were valid and the recipient wanted to purchase the goods at the stated price, he could merely wait for the goods to arrive.⁸⁴ A slightly more presumptuous seller might ship the merchandise unordered, along with a cover letter stating that the recipient should simply keep the shipment if he wishes to buy, and return the shipment if he does not. A truly aggressive seller might try to make acceptance arise not from inaction, but from some affirmative action that the buyer would have taken in the absence of an offer — for example, opening for business as usual on the following Monday morning.

82. RESTATEMENT (SECOND) OF CONTRACTS § 50(1) (1979).

83. The usual rule is that an acceptance is valid upon its dispatch by the offeree. See, e.g., RESTATEMENT (SECOND) OF CONTRACTS § 63 (1979): “Unless the offer provides otherwise, (a) an acceptance made in a manner and by a medium invited by an offer is operative and completes the manifestation of mutual assent as soon as put out of the offeree’s possession, without regard to whether it ever reaches the offeror”

84. In discussing this model, I adopt the convention that the offeror is female and the offeree is male. In the succeeding Part, the convention is reversed.

A seller might want to try these approaches for any of a variety of reasons. First and most innocently, in those cases where the buyer does wish to accept and the seller knows this, the expense of an extra communication is saved. Second, the buyer can enjoy the use of the goods at an earlier time (especially when the merchandise is shipped along with the offer), which may make the offer more valuable to him. Third, putting the goods in front of the buyer may be an effective marketing technique; it may increase the buyer's desire for the goods and the price he is willing to pay for them. Fourth, the seller may regard this as a way of demanding the buyer's attention in order to get him to consider the offer. Fifth, the buyer might be induced by the trouble, expense, or inconvenience of affirmatively responding to accept an offer he would not otherwise entertain. Some of these reasons obviously are more laudable than others.

As a matter of prevailing doctrine, however, failing to reply to an offer can operate as an acceptance only in certain special circumstances.⁸⁵ The *Restatement* summarizes the common law rule:

(1) Where an offeree fails to reply to an offer, his silence and inaction operates as an acceptance in the following cases only:

(a) Where an offeree takes the benefit of offered services with reasonable opportunity to reject them and reason to know that they were offered with the expectation of compensation.

(b) Where the offeror has stated or given the offeree reason to understand that assent may be manifested by silence or inaction, and the offeree in remaining silent and inactive intends to accept the offer.

(c) Where because of previous dealings or otherwise, it is reasonable that offeree should notify the offeror if he does not intend to accept.

(2) An offeree who does any act inconsistent with the offeror's ownership of offered property is bound in accordance with the offered terms unless they are manifestly unreasonable. But if the act is wrongful as against the offeror it is an acceptance only if ratified by him.⁸⁶

Each of the circumstances listed suggests a different reason for binding the offeree, corresponding to the main justifications commonly offered in favor of the more basic duty to keep promises. The chief implicit rationale of subsection (1)(a) is restitution. When the offeree silently and knowingly appropriates the benefits of offered services, and he had

85. See *McGlone v. Lacey*, 288 F. Supp. 662 (D.S.D. 1968) (defendant lawyer's silence was not assent to handle plaintiff's tort claim against a third party, though statute of limitations ran on claim eight weeks after lawyer received plaintiff's letter authorizing the representation); *Prescott v. Jones*, 69 N.H. 305, 42 A. 352 (1898) (insured's silence was not assent to renew fire insurance policy, though insurer stated it would issue a renewal unless notified otherwise). A survey of the relevant precedents is found in Grosse, *Silence as Acceptance*, 9 S.U. L. REV. 81 (1982).

86. RESTATEMENT (SECOND) OF CONTRACTS § 69 (1979).

a reasonable opportunity to reject, he will be unjustly enriched if he does not pay, so his silence is conventionally taken to imply consent. If the services were of no actual benefit, in contrast, there would be no enrichment; and if there were no reasonable opportunity to reject, any enrichment would not be unjust.⁸⁷ The rationale applies only to services because unlike goods, services cannot be returned once bestowed. An analogous principle animates subsection (2), however, because if goods are offered under similar circumstances and the offeree actually uses them, disgorgement usually will be a less than perfect remedy.⁸⁸

The chief implicit rationale of subsection (1)(b), in contrast, is reliance or estoppel. If the offeree is led to believe that he can accept by silence and attempts to so accept, he may rely on the existence of a bargain in various ways. Enforcement of the original offer is necessary on this theory to protect the offeree's change of position, which may be difficult if not impossible to prove directly — especially if reliance takes the form of forgoing substitute exchanges.⁸⁹ The reliance rationale can cut both ways, of course. Even if the offeree does not wish to accept, an extended and otherwise unnecessary silence on his part can induce the offeror to infer acceptance and to rely. In the view of (1)(c), the offeree might reasonably be demanded to reject affirmatively in order to protect the offeror's reliance interest.⁹⁰

87. A hypothetical I have used in my contracts class involves the windshield washing services motorists can obtain on New York City street corners while waiting for red lights to change. Is there a reasonable opportunity to reject? Native New Yorkers disagree among themselves.

88. A provision of the Postal Reorganization Act of 1970, Pub. L. No. 91-375, 84 Stat. 749, found in 39 U.S.C. § 3009 (1988), reverses the rule of § 69(2) for goods delivered through the U.S. mails; many states have enacted similar statutes. The statutory language suggests a legislative purpose to protect consumers unfamiliar with the common law rule from fraud or intimidation:

Mailing of unordered merchandise.

(a) Except for (1) free samples clearly and conspicuously marked as such, and (2) merchandise mailed by a charitable organization soliciting contributions, the mailing of unordered merchandise or of communications prohibited by subsection (c) of this section constitutes an unfair method of competition and an unfair trade practice [under the Federal Trade Commission Act].

(b) Any merchandise mailed in violation of subsection (a) of this section, or within the exceptions contained therein, may be treated as a gift by the recipient, who shall have the right to retain, use, discard, or dispose of it in any manner he sees fit without any obligation whatsoever to the sender. All such merchandise shall have attached to it a clear and conspicuous statement informing the recipient that he may treat the merchandise as a gift . . .

(c) No mailer of any merchandise mailed in violation of subsection (a) of this section, or within the exceptions contained therein, shall mail to any recipient of such merchandise a bill for such merchandise or any dunning communications.

39 U.S.C. § 3009 (1988).

89. The reliance rationale is underscored by the *Restatement's* requirement that the offeree subjectively intend to accept — a qualification otherwise uncomfortably at odds with the general trend in modern contract doctrine toward an objective theory of assent. I discuss the objective-subjective tension in the doctrine at greater length in section V.C below.

90. An illustration of this possibility is found in the case of *Kukuska v. Home Mut. Hail-Tornado Ins. Co.*, 204 Wis. 166, 235 N.W. 403 (1931), where an insurance company retained a

The third rationale — that of bargain — is suggested by the phrase “because of previous dealings” in subsection (1)(c) and to a lesser extent underlies the other subsections as well. Silence will be acceptance if the parties have agreed on such an arrangement for their mutual convenience. For example, when one joins the Book-of-the-Month Club one consents, in exchange for certain up-front benefits, to participate in the Club’s negative option plan. The bargain rationale should in principle extend to implicit agreements as well as explicit ones, though their existence may be more difficult to establish in practice.⁹¹

None of these rationales, however, provides a real account of why silence should qualify as acceptance in some situations and not in others. Instead, they merely characterize the exceptions to the general rule rather than explain them. For instance, the unjust enrichment rationale assumes that an offeror can in some circumstances either presume the offeree’s consent or legitimately put him to the trouble of a response. Otherwise the offeror has either acted officiously or with donative intent, and the offeree’s retention of proffered benefits ought not to be viewed as unjust.⁹² If we presume initially that silence is not a valid form of acceptance, it is hard to see why an offeror should reasonably expect compensation when providing goods or services in the absence of some affirmative indication on the offeree’s part that the efforts are desired.

Similarly, the estoppel rationale presupposes its conclusion, since it requires that any reliance be a reasonable response to the other party’s behavior in order to deserve protection. It is hard to see why reliance on silence would be reasonable given a background rule that silence is not ordinarily an authorized form of acceptance. Only if the basic background rule were otherwise would reliance on it be reasonable;

farmer’s application and deposit for a hail insurance policy for an extended period after the application was solicited, and then rejected the application just hours before a severe hailstorm. Although the application was never accepted explicitly, the court found that the insurer’s retention of the farmer’s offer past the time that insurance could be obtained elsewhere breached an implied duty to respond within a reasonable time. What made the *Kukuska* result particularly compelling was that the insurer’s silent retention of the deposit effectively prevented the applicant from applying to any other insurer.

91. It should be apparent that any arrangement under which the parties contract out of the ordinary rules of offer and acceptance must be established by “previous dealings,” that is, prior to the offer in question. An unsolicited offer that designates silence as acceptance cannot properly be interpreted as an offer to vary formation rules between the parties. In order to be legally cognizable such an arrangement needs to be formed according to the rules in force at the time of the offer, and not according to the hoped-for rules the parties are trying to establish.

92. If the offeror is ignorant of the background rule regarding silence as acceptance, it might be unjust to take advantage of her ignorance. But over time, as the convention becomes established, the number of those ignorant of the rule should be few. Requiring restitution would then be an instance of the general equitable principle that it is wrong to profit from another’s ignorance, but would not justify a specific doctrinal exception to the law of acceptance.

but then legal obligation could be founded directly on the background rule rather than indirectly on the reliance.

In addition, while the consent rationale can explain why parties who have made their own arrangements regarding the meaning of silence are entitled to have those arrangements respected, it cannot explain why parties should have to contract into a rule of silence as acceptance rather than contract out of it. Clearly we might have a regime in which silence was generally understood as acceptance, and still respect the wishes of individuals who want to arrange that this default rule would not apply to their private dealings. The *Restatement* does not tell us why such a regime is inferior to the one we happen to have.

The commentators also have justified existing doctrine in terms of customary understanding alone. Both Williston and Corbin ground their defense of the black-letter rule on the rationale that ordinarily the parties will not reasonably expect silence to indicate assent. This is, of course, merely an argument that such expectations reflect the present rule, not that the present rule is preferable.⁹³ More recently, Farnsworth, the current Reporter to the *Restatement*, has explained: "[A]n offeree's silence in the face of an offer . . . is not ordinarily an acceptance, because the offeror has no reason to believe from the offeree's silence that he promises to buy."⁹⁴

All these standard responses, like the more general arguments for promise-keeping on which they are based, reflect a perspective of convention maintenance. They arise from the need to describe and maintain the preexisting convention regarding whether silence is to be taken as assent, but when offered to justify that convention they are unhelpful. In order to explain what the default rule should be *a priori*, one must offer reasons that can distinguish between alternate conventions. For instance, one might argue on libertarian grounds that ac-

93. "Generally speaking, an offeree need make no reply to offers, and his silence and inaction cannot be construed as an assent to the offer; but the relations between the parties or other circumstances may have been such as to have justified the offeror in expecting a reply, and, therefore, in assuming that silence indicates assent to his proposal." WILLISTON ON CONTRACTS § 91 (3d ed. 1957) ("When Silence and Inaction May Amount to Assent"). Similarly, Corbin states:

Silence may indicate that the offeree did not hear or receive or understand the offer; or it may indicate that he preferred to give no thought to the offer and to waste no time and effort in making a reply, whether orally or by a writing. In such cases, the offeror is not reasonable in giving to the offeree's mere silence an interpretation that he accepts

[The exceptions to the rule] are all cases in which the conduct of the party denying a contract has been such as to lead the other reasonably to believe that silence, without communication, would be sufficient.

CORBIN ON CONTRACTS §§ 72, 75 (1963).

94. E. FARNSWORTH, CONTRACTS § 3.15 (1982).

ceptance by silence should be the exception rather than the rule, to protect the offeree's right to be let alone. This comes closer to suggesting a functional justification for the prevailing doctrine, but does not by itself explain the commonly articulated exceptions. Nor does it spell out either the distributive or allocative consequences of the rule, or just how it protects the offeree's privacy.

With a simplified account of contract bargaining, however, some of the functional consequences of the common law rule and its various alternatives can be examined. Before developing a formal presentation, however, let me try to provide some heuristic motivation for the modeling choices I have made. To fix a specific image in the reader's mind, I will speak throughout as if the offeror is a seller of goods and the offeree is a buyer, but nothing in the argument turns on this characterization. While a host of strategic considerations might be incorporated into the analysis, my objective at the moment is to be a parsimonious rather than an exhaustive modeler. Accordingly, I have tried to identify the minimal set of considerations needed to make the model useful and interesting.

Which features of the problem are the essential ones? To begin with, the model must provide an opportunity for at least two messages to pass between the parties, to admit an alternative to silence as a mode of acceptance. Second, some positive cost should be associated with a message; otherwise all opportunities for communication would be exploited. Third, the model should admit a variety of possible sellers' costs and buyers' valuations, for otherwise full efficiency could be achieved trivially by a rule that either decreed or forbade an exchange, depending upon whether the buyer's valuation was greater or less than the seller's cost. Fourth and finally, the contract price should be determined endogenously within the model rather than prescribed at the outset, because parties can find mutual advantage in bargaining around the constraints of legal rules only by adjusting price.

I have deliberately omitted from the model a number of interesting and important complications. I ignore the possibility that the parties to an exchange may want to engage in reliance investments, although the cost to the parties of an additional communication may be interpreted to incorporate the costs of such reliance. Perhaps more significantly, I also abstract from the costs of enforcing contracts in the courts *ex post*. I am effectively assuming either that enforcement is costless or that individuals are led by considerations of reputation to keep their contractual obligations.⁹⁵ In a full analysis of contract bar-

95. I defend this decision on the grounds that problems of costly enforcement have been acknowledged and widely analyzed in the law and economics literature, and that my main pur-

gaining, of course, the remedial provisions of the law would at some point have to be considered.

One last doctrinal clarification, related to the issues of modeling I have been discussing, is necessary before turning to the substantive discussion. I use the term "offeror" in this and in the next Part to refer to the person who initiates the bargaining. In actual practice, however, many communications that initiate bargaining do not legally qualify as offers, even if the parties refer to them as such in ordinary parlance. As a matter of technical doctrine, a communication requesting or suggesting an exchange is not an "offer" unless it would be reasonably understood to empower its recipient to create a binding contract by simple assent.⁹⁶ If more than one additional communication is necessary in order to conclude the exchange, for example to settle its secondary terms, then no offer has yet been made.

This distinction does not arise in the formal model, which assumes that the bargaining is of a take-it-or-leave-it form. A more realistic model of bargaining would incorporate several bargaining stages, and admit that a number of communications are often necessary before either party even reaches the point of inviting the other to make an offer. I will speak in this Part, however, as if the bargaining process contains just two relevant communications — the offer and the acceptance. I therefore will ignore the parties' ability to make counteroffers, not to mention the additional possibilities of revocations, withdrawals, and temporizing responses. Even so stylized a simplification as this will reveal important effects of prevailing legal doctrine on the outcome of negotiation. Although it may be helpful to interpret the model as focusing only on the penultimate stage of negotiations, one should keep in mind that strategically important features of the law may be suppressed in the analysis.

B. *The Formal Model*

Consider a bargain over the sale of a book. Suppose the seller's cost of providing the book, denoted as C , and the value that the buyer attaches to the book, denoted as V , are precisely measurable. I will

pose here is to illuminate the process of precontractual bargaining. See, e.g., Kaplow, *Private Versus Social Costs in Bringing Suit*, 15 J. LEGAL STUD. 371 (1986); Menell, *A Note on Private Versus Social Incentives to Sue in a Costly Legal System*, 12 J. LEGAL STUD. 41 (1983); Polinsky & Rubinfeld, *The Welfare Implications of Costly Litigation for the Level of Liability*, 17 J. LEGAL STUD. 151 (1988); Shavell, *The Social Versus the Private Incentive to Bring Suit in a Costly Legal System*, 11 J. LEGAL STUD. 333 (1982).

96. The standard definition is found in the RESTATEMENT (SECOND) OF CONTRACTS § 24 (1981): "An offer is the manifestation of willingness to enter into a bargain, so made as to justify another person in understanding that his assent to that bargain is invited and will conclude it."

refer to these quantities as the seller's and buyer's respective *reservation prices*. The strategic sequence of events is illustrated in Figure 2, with earlier events appearing toward the top of the diagram. Initially, the seller must decide whether to offer the book for sale at all. If she does make an offer, she must also select a specific price, which is denoted as P . It costs the seller a fixed amount, denoted as S , to send or otherwise communicate the offer to the buyer, but this cost need only be paid if an offer is actually made. If the seller makes no offer, the bargaining ends without gain or loss for either side. This outcome is denoted by the ordered pair $(0,0)$ that appears at the end of the rightmost branch in Figure 2. If the seller does make an offer, on the other hand, the buyer is then faced with a decision whether to accept, reject, or ignore the offer. I assume that it does not cost the buyer

Notation:
 V: buyer's valuation of good
 C: seller's valuation of good
 P: sale price of good
 S, R: cost of sending and receiving messages

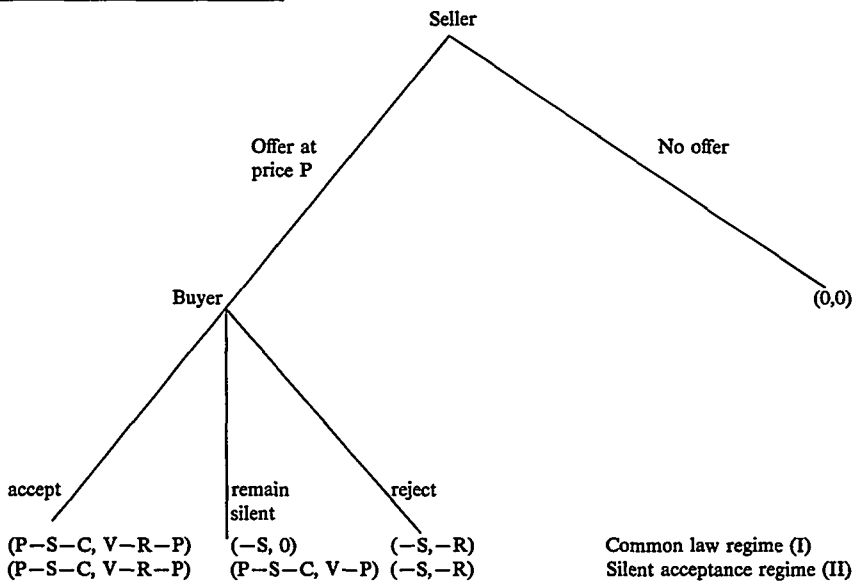


Figure 2. Acceptance by silence

anything to read and consider the offer, and that he actually does so.⁹⁷ If the buyer simply ignores the offer after reading it, he thereby incurs no direct cost, although depending on the legal rule in force, the inaction may obligate him to purchase the book. In order affirmatively to reject or accept the offer, however, the buyer must communicate a return message to the seller; and the cost of his response is denoted as R . Following the buyer's decision, the bargaining ends, and trade takes place if and only if a contract was formed under the legal rule that happens to be in force. I assume that the established legal rule and the specific values of all relevant parameters — V , C , S , and R — are common knowledge.

The parties' respective gains or losses in the series of events that can follow an offer will depend upon the legal rule in force. The bottom two lines of Figure 2 show the payoffs under two alternate doctrinal regimes. The first set of payoffs, labeled (I), are those that follow under the usual common law rule, which holds that no contract is formed unless the buyer explicitly accepts.⁹⁸ The second set of payoffs, labeled (II), correspond to a hypothetical legal regime in which silence implies acceptance.

Under the first regime, the payoffs at the end of each sequence of events are calculated in the following manner: If the buyer explicitly accepts the seller's offer, the seller receives the sales price P , and incurs production cost C and communication cost S for a net payoff of $(P - S - C)$. The accepting buyer nets $(V - R - P)$; he enjoys value V , incurs communication cost R , and must pay P to the seller. If on the other hand the buyer explicitly rejects the seller's offer, the parties' payoffs are $(-S, -R)$; no sale is concluded, but each side loses the cost of a message. Finally, if the buyer ignores the seller's offer, the buyer neither gains nor loses anything, and the seller loses S , the cost of sending her offer initially.

Under the second regime, the payoffs following any explicit response by the buyer are the same as under the common law. The only difference occurs if the buyer ignores the seller's offer, in which case the offer is accepted by silence. In this case, the seller nets $(P - S - C)$, just as if the buyer had explicitly accepted, and the buyer nets $(V - P)$ (value less price, and no costs spent responding to the offer).

Since the game is one of full information, the outcome can be found in straightforward fashion through the method of backward in-

97. The model of form-contract bargaining presented in the following Part relaxes this assumption.

98. I ignore the complications of Restatement section 69(1)(b) for the moment, returning to it in the next subsection.

duction. First, one looks to see what the buyer would find rational to do if faced with an offer to buy, and then one finds the seller's optimal offer given the buyer's expected response. Focusing on the buyer, it should be obvious that he will never choose to reject under the first regime or accept under the second. In either case he can do strictly better by remaining silent and saving the cost of a response. Under the common law he will simply choose between accepting and ignoring, and will accept if and only if his net gain from doing so is positive. This will be the case if the price offered is sufficiently low; that is, if $P < V - R$.⁹⁹

Under the silent-acceptance regime, alternatively, the buyer chooses between rejecting and ignoring, and will reject if and only if his loss from remaining silent is greater than the cost of a response. This will be the case if the offered price is sufficiently high; that is, if $P > V + R$. Since she can anticipate the buyer's reaction, the seller when making an offer will in either case want to set her price just low enough to induce the buyer to purchase. Offering a lower price than necessary fails to maximize her profits; offering a higher price is suboptimal because she is better off saving the cost of a message than making an offer she knows the buyer will reject.¹⁰⁰

Notice that under either regime there exists some maximum amount — call it the buyer's *net reservation price* — that the seller can obtain from the buyer in a sale. The buyer's net reservation price differs under the two regimes, however, and is lower under the common law. This is because in order to get the buyer to accept under the common law, the price must be below his gross valuation V by enough to justify spending R on a response. To get buyer to accept under regime II, in contrast, the price can be above his valuation by as much as the cost of a response, since he must spend that amount in order to avoid being bound. It follows that the price charged by a rational seller will equal $V + R$ under regime II and will equal $V - R$ under regime I. The difference between the two prices will be exactly twice the buyer's cost of responding.

For the final step in the induction, we must determine whether an offer will be made at all. Because the seller can always earn a return of zero by doing nothing, and because making an offer is costly, she will

99. I assume that if the buyer is indifferent between purchasing and not purchasing, he chooses to purchase. Similarly, I assume that if the seller is indifferent between selling and not selling, she chooses to sell. This simplifies the discussion and makes no difference to the analysis.

100. This particular feature of the model is an artifact of the full-information assumption. In a more complicated analysis, sellers who are uncertain of their customers' reservation prices will generally want to make an offer that will be rejected by low-value buyers, in order to get a higher return from high-value buyers.

want to make an offer if and only if the maximum price she can obtain will cover her combined costs of production and communication. Under regime I, this will be the case if and only if $V - R > C + S$. Under regime II, it will be the case if and only if $V + R > C + S$.

We can now summarize the equilibrium outcomes under each of the alternate legal regimes. Under the common law, the equilibrium is for no offer to be made when $V - R < C + S$, and otherwise for an exchange to be concluded at price $P = V - R$. Under the silent-acceptance rule, the equilibrium is for no offer to be made when $V + R < C + S$, and otherwise for an exchange to be concluded at price $P = V + R$.

The analysis predicts that fewer sales will take place under regime I than under regime II. Only when the gross potential surplus from trade, $(V - C)$, exceeds the sum of the two communication costs, $R + S$, will the seller offer an exchange that the buyer will accept under the common law. In contrast, for this to occur under regime II, the gross surplus from trade must exceed the *difference* of the two communication costs — which is necessarily less than the sum. Intuitively, a buyer of given valuation is more willing to accept a higher price under regime II; for this reason a seller facing a given production cost is more willing to make an offer initially.

Since the sum of communication costs is necessarily positive while the difference may be negative, regime II, but not the common law, permits slightly inefficient exchanges to take place. Indeed, this will occur whenever the cost of a buyer's response exceeds the seller's cost of an offer, and when production cost C is not too greatly above the buyer's value V . Grossly inefficient exchanges cannot take place even under regime II, however, because if C is too far above V , the buyer will reject any offer that the seller would want to make — and the seller, anticipating this, will make no offer.

Regime II might therefore appear inefficient. On the other hand, regime II does allow those marginally desirable exchanges that under the common law are not worth the cost of a response. It also allows those sales that would occur under either regime to be concluded with one message rather than two. A more complete accounting is necessary to resolve the issue.

The relative efficiency of the two regimes is compared graphically in Figure 3. The horizontal axis on the graph measures the potential surplus from a sale gross of any communication costs, $(V - C)$, an amount that varies among types of buyers and sellers. The vertical axis measures the net social surplus that remains after buyers and sellers exercise their optimal strategies and all costs of communication are

subtracted out. This net surplus depends upon the legal regime in force, and also on the potential value of $(V - C)$ the parties happen to start with.

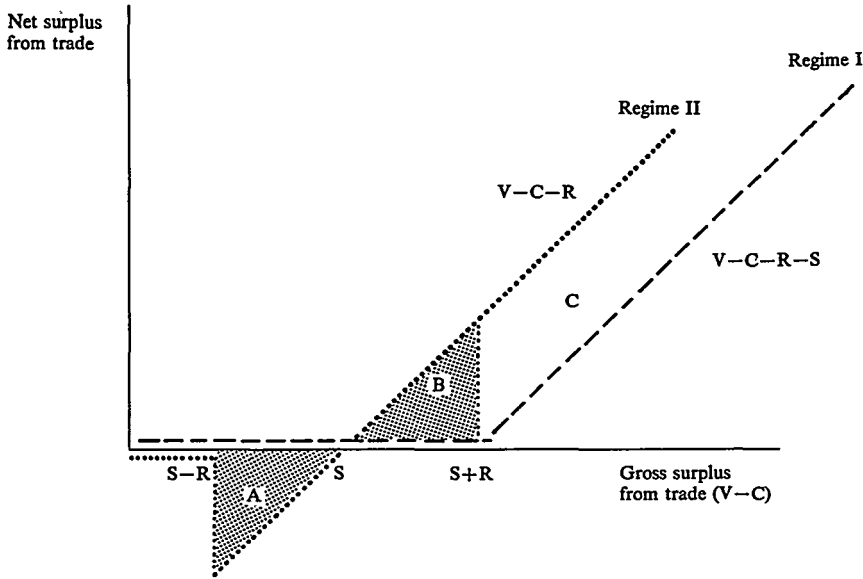


Figure 3. Welfare effects of differing acceptance rules

This dependence is shown in Figure 3 by two lines. The common law rule is represented by the broken and kinked line marked "Regime I." This line coincides with the horizontal axis of the drawing for values of $(V - C)$ to the left of the point marked $S + R$ (for the sake of legibility, it is drawn slightly above the axis), and rises dollar-for-dollar to the right of that point. This is because a sale takes place under the common law if and only if $(V - C)$ exceeds $S + R$. Net social surplus therefore equals zero for $(V - C)$ less than $S + R$, and equals $(V - C - S - R)$ for $(V - C)$ greater than $S + R$ (a deal requires two messages, the cost of which must be deducted to find net surplus).

The silent-acceptance rule is represented by the dotted line marked "Regime II," which coincides with the horizontal axis for values of $(V - C)$ to the left of $S - R$ (it is drawn slightly below the axis for legibility), jumps downward at that point, and rises dollar-for-dollar to the right of it. Under the silent-acceptance regime, a sale takes place if and only if $(V - C)$ exceeds the lower cutoff point $S - R$. When $(V -$

C) is less than that cutoff point, there is no offer and social surplus is zero. When $(V - C)$ is above that cutoff point, the net social surplus is $(V - C - S)$ — gross surplus less the cost of one message.

Not surprisingly, Figure 3 reveals that neither legal regime is uniformly more efficient under all circumstances. Instead, which regime is best depends on the value of potential gross surplus $(V - C)$, and there are three relevant ranges of this quantity. When $(V - C)$ is less than the difference in communication costs $S - R$, as will be the case for parties with sufficiently small or negative gross surplus, the two regimes are equivalent in efficiency terms: no sale will be made and no messages will be sent under either formation rule.

For an intermediate range of values, where gross surplus $(V - C)$ is less than the cost of a seller's message S but greater than the difference between the two message costs, $S - R$, the common law regime is more efficient. No sale takes place under the common law, and a wasteful sale takes place under the alternative regime. The regime-II sale is wasteful because the gross social surplus obtained is less than the cost of sending the seller's offer. The seller finds this profitable, since she profits from the offer's nuisance value, but the buyer's loss exceeds the seller's gain. The advantage of avoiding such opportunistic offers corresponds graphically to the shaded triangular area marked A in Figure 3.

Finally, when the parties' gross potential surplus $(V - C)$ exceeds the cost of the seller's message S , the silent-acceptance regime is superior. The reason for this differs slightly, depending upon whether the gross surplus is greater or less than the sum of both message costs. When gross surplus is greater than the cost of one message but less than the cost of two messages, a sale will take place under regime II but not under regime I. Since under regime II the sale can be concluded with a single message, it is socially desirable, although marginally so. The efficiency gain from such marginal sales corresponds to the triangular area marked B in Figure 3. When gross surplus is greater than the cost of two messages, a sale will take place under either regime. But it is cheaper to achieve this with one message rather than two, and the cost savings from doing so corresponds to the unshaded quadrilateral area marked C in Figure 3.

Since neither regime is uniformly superior, the overall efficiency ranking of the two depends on their average performance over the entire heterogeneous population of buyers and sellers, and thus on the frequency distribution of the various possible costs and valuations. This analysis cannot provide unambiguous support, therefore, for any universal theory of the efficiency of the common law, such as that

prominently associated with the work of Richard Posner. In fact, under some reasonably plausible assumptions regarding the distribution of reservation prices, just the reverse conclusion follows. For instance, suppose it is just as likely for gross surplus to fall in the low range bounded by the difference in communication costs $S - R$ and the seller's communication cost S , as it is to fall into the medium range bounded by the seller's cost S and the sum of communication costs $S + R$. Since the ranges are of equal width, this supposition seems plausible in the absence of contrary evidence.¹⁰¹ It follows then that the advantage of the common law regime in avoiding marginally wasteful sales (depicted by area A) exactly balances the advantage of the silent-acceptance regime in achieving the marginally desirable sales that the common law regime misses (depicted by area B). The silent-acceptance regime then comes out ahead on balance, because the sales that would take place under either regime are achieved at lower cost (area C).

Alternatively and perhaps more simply, if the cost of the buyer's return message is small in magnitude, then the silent-acceptance regime is more efficient than the common law. To see this, observe that the costs represented by all three areas A , B , and C in Figure 3 are small when R is small. The costs represented by areas A and B , however, are doubly small; not only is the efficiency difference per exchange small, but the number of buyers and sellers falling into those zones is also small. Hence, area C outweighs area A in magnitude, and the savings from consummating trade with a single message dominates any countervailing advantages of the common law rule.¹⁰²

One hesitates to draw any very strong conclusions from the foregoing analysis, given its illustrative character and the simplified assumptions that went into it. The model can be interpreted, nevertheless, to suggest that some of the specific common law exceptions of the *Restatement* are justifiable on efficiency grounds. For instance, if the offeree has "reasonable opportunity to reject" proffered services (subparagraph (1)(a)), the cost to him of a response is presumably small, in which case acceptance by silence is the efficient rule under my analysis. The cost of declining to exercise dominion over proffered

101. A possible objection to this argument is that I have implicitly and unwarrantedly assumed that the buyer's response cost is the same under either legal regime. One important reason why it might not be is that the seller might be able to influence it by the nature or timing of her offer, and that her incentive to do this will depend on the legal rule in force. I consider this possibility more fully in section V.D below.

102. In the technical calculus of infinitesimals, the efficiency gains measured by C are of first-order magnitude (small in height, but not in width) while the gains measured by areas A and B are of second-order magnitude (small in both height and width).

goods is probably also small under most circumstances; accordingly, the rule in subparagraph (2) that makes the exercise of such dominion operate as an acceptance may be efficient as well.

Conversely, even when the cost of a buyer's response is large, acceptance by silence can still be more efficient, so long as either the surplus from exchange is sufficiently large or the chances are high that it is large. The limiting case of this, of course, is the physician who furnishes medical services to an unconscious pedestrian, in the belief that the pedestrian will pay for them upon regaining consciousness. Here the offeree's response cost is very high, although not infinite (the pedestrian could arrange in advance to carry on his person a card specifying the conditions under which he will accept treatment). Nonetheless, it is efficient to presume that the pedestrian consents to pay, and the law of restitution does just this.¹⁰³ The presumption only extends to services likely to be of high value, though, since the offeree's high cost of responding could otherwise subject him to all sorts of unwanted offers from officious if not opportunistic volunteers.

The language of subparagraph (1)(c) that evokes the parties' consent can also be justified in efficiency terms, though of a different sort. If individual pairs of buyers and sellers have reason to think they will fall into the group for whom acceptance by silence is preferable, it is of course efficient to allow them to opt for that regime. But this is simply an instance of the generic efficiency argument for freedom of contract, rather than an explanation of the particular doctrine in question.

From the standpoint of efficiency, it is harder to find support in the model for the strong presumption of both the *Restatement* and the common law against interpreting silence as acceptance. This is not to say, however, that the traditional presumption could not be justified on some other basis such as distributional fairness or the substantive right to privacy. Some might view the silent-acceptance rule as unfairly rewarding opportunistic behavior on the part of offerors, to an extent outweighing any efficiency gains that it could otherwise achieve.

Indeed, if the conclusions of the formal model are to be believed, the silent-acceptance rule is open to severe objection on just these grounds. When goods are exchanged under that regime, not only does the buyer get none of the surplus from the exchange, but he winds up losing an amount equal to his cost of sending a response. The seller's ability to force the buyer to expend resources to avoid an unwanted offer gives her a strategic advantage, with the result that the buyer

103. *Cotnam v. Wisdom*, 83 Ark. 601, 104 S.W. 164 (1907); *In re Crisan Estate*, 362 Mich. 569, 107 N.W.2d 907 (1961).

actually ends up in a worse position after the exchange than if the offer had never been made.¹⁰⁴ For this reason, those arrangements in which parties contract out of the common law rule typically provide some up-front benefits to the offeree, like the introductory bonuses commonly offered by book clubs. Such loss leaders may be necessary to induce the offeree to enter into the arrangement at all, since he must be compensated *ex ante* for the opportunism he can expect from the offeror *ex post*.

C. *A Variation on the Model: Subjective Intention To Accept*

While the foregoing analysis considers only a limited set of strategic choices on the part of the negotiating parties, it can easily be extended to incorporate more complicated situations. To show how this might be done, it is useful briefly to examine an alternative legal rule, one that makes the existence of a contract following the buyer's silence turn on his subjective intention. Such a rule gives the buyer an additional degree of freedom when faced with the seller's offer, and this alters the strategic structure of the bargaining.

While the trend of modern contract law favors the objective theory of mutual assent, the earlier subjective tradition remains influential, both metaphorically (e.g., the "meeting of the minds") and at the level of concrete doctrine. An instance of this is found in *Restatement* section 69(1)(b), which on its face actually requires that the offeree subjectively intend to accept at the time of silence in order to enforce the bargain later.

This subsection of the *Restatement* has received substantial criticism for its inconsistency with the modern objectivist trend.¹⁰⁵ The chief problem with it, as with the subjective theory of assent generally, is a practical one. Determining the offeree's subjective intentions at the moment of the offer is often severely difficult. If the cost of reliably making this determination is high, a subjective test is unworkable; the risk is too great that the offeree will want subsequently to misrep-

104. The sharpness of this conclusion is an artifact of the full-information assumption. In a more realistic model in which the seller could not be sure of the buyer's reservation price, the buyer would typically be left with some of the surplus from any trade that occurred. Even with imperfect information, though, buyers could be worse off under the silent-acceptance rule than if no offer had issued, while this could never occur under the common law. Furthermore, in all situations the silent-acceptance rule gives a relative distributional advantage to the seller. For details, see A. Katz, *supra* note 81.

105. For instance, Farnsworth calls § 69(1)(b) a "throwback to subjectivism," and elsewhere remarks:

So fundamental is the tenet that mere silence is not acceptance that, even as master of his offer, the offeror is powerless to alter the rule. . . . As it was neatly put by Karl Llewellyn, to give that effect to invited silence "in a systematics centering on overt manifestations is, one may suggest, almost lewd." E. FARNSWORTH, *supra* note 94, at 144, 145.

resent his intention if he comes to regret the bargain. Under some circumstances, however, the offeree's intention to accept may be verifiable ex post at reasonably low cost. He may express such an intention to a third party, or may engage in observable actions such as investing in reliance or preparing to perform that would not be rational absent an intention to complete the bargain. As the comments note:

The case for acceptance is strongest when the reliance is definite and substantial or when the intent to accept is objectively manifested though not communicated to the offeror Even though the intent to accept is manifested only by silent inaction, however, the offeror who has invited such an acceptance cannot complain of the resulting uncertainty in his position.¹⁰⁶

While the *Restatement's* commentary speaks largely in terms of fairness, a formal analysis of the situation's strategic structure demonstrates that a subjective intention rule has allocative consequences as well. In particular, a subjective rule can be more efficient than either of the two objective rules already discussed. If the cost of determining subjective intention is low, an explicit response from the buyer becomes dispensable and the cost of making it can be saved.

The game tree representing the strategies available in a subjective-intention regime, denoted as Regime III, is depicted in Figure 4. The sequence of actions is almost the same as under the two previous regimes, but with one important difference — the buyer has four choices following an offer rather than three. As before, he can still expressly accept or reject, but now he has two alternatives if he chooses to remain silent: he can silently determine to accept, or silently determine to reject. The reader should interpret this to mean that the buyer, in addition to deciding whether to send an explicit response, also chooses whether to take some action, publicly verifiable ex post but uncommunicated at the time, that entails no additional cost to him so long as the contract is formed. This private action could be costly if the contract were not enforced, but for the purposes of the discussion, I assume that by taking it the buyer can guarantee himself a deal.

If the buyer expressly responds to the seller's offer, the parties' payoffs are the same as under the two regimes previously analyzed: $(P - S - C, V - R - P)$ if he expressly accepts and $(-S, -R)$ if he expressly rejects. If the buyer remains silent, however, he can effectively choose by his intention whether or not to be bound. If he intends to accept, the payoffs following silence are the same as under regime II: the seller gets $(P - S - C)$, and the buyer gets $(V - P)$. If conversely he

106. RESTATEMENT (SECOND) OF CONTRACTS § 69 comment c (1981).

intends to reject, then the payoffs following silence are the same as under regime I: the seller loses S and the buyer comes out even.

Notation:
 V: buyer's valuation of good
 C: seller's valuation of good
 P: sale price of good
 S, R: cost of sending and receiving messages

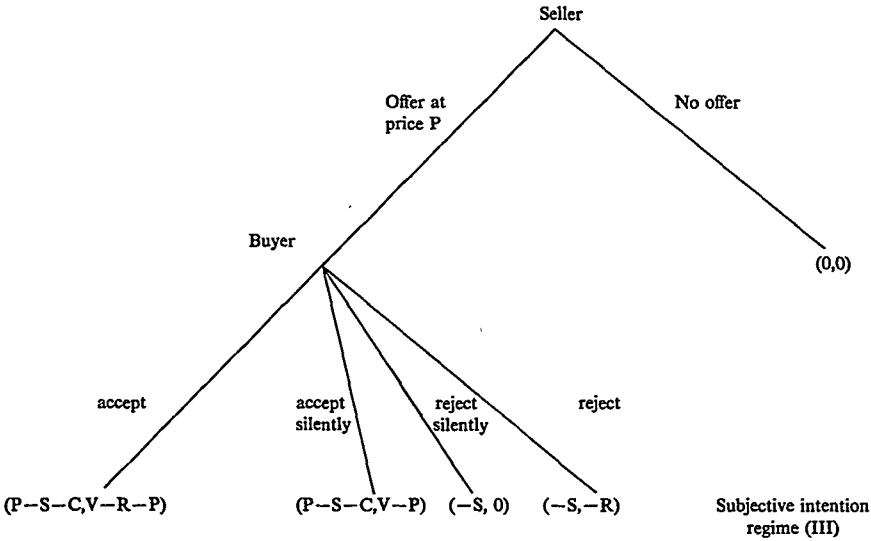


Figure 4. Subjective interpretation of silence

We again solve for the equilibrium outcome using backward induction, starting with the buyer's reaction to an offer. It should be apparent that under a subjective-intention rule the buyer will never respond explicitly. Whether he chooses to accept or reject, he can achieve the same result by silence, and thereby save the cost of a response. His decision is therefore simplified to choosing between a silent acceptance or rejection, and he will prefer the former if and only if the price offered by the seller is less than the value V he places on the sale. Foreseeing this, the seller will want to fix the price exactly at V if she makes an offer. Moreover, she will want actually to make an offer if and only if this price is enough to cover her combined production and

communication costs, $(C + S)$. In summary, an exchange at price V will be offered and accepted if and only if the parties' gross surplus from exchange, $(V - C)$, exceeds a threshold level equal to the seller's communication cost, S .

Table 1 compares the equilibrium outcomes of all three legal regimes. It shows that more sales will take place under the subjective-

Regime	Sale occurs whenever	Sale price
I (Common law)	$V - C > S + R$	$V - R$
II (Silent acceptance)	$V - C > S - R$	$V + R$
III (Subjective intent)	$V - C > S$	V

intention regime III than under regime I, but fewer sales will take place under regime III than under regime II. This is because the threshold level of surplus necessary for a sale to take place under regime III lies between the corresponding thresholds for the other two regimes. Under regime I, that threshold is the sum of seller's and buyer's communication costs; under regime II, it is the difference between those costs, and under regime III it is the seller's communication cost alone. Furthermore, under the subjective intention rule, the sale price will be higher than under regime I and lower than under regime II because the seller always wants to set price equal to the buyer's net reservation price. Under regime I, the buyer's net reservation price equals the value V he places on the book less his response cost R . Under regime II, his net reservation price equals the value he places on the book *plus* his response cost. Under regime III, however, the buyer never needs to respond explicitly to the seller's offer, so his cost of doing so does not affect his net reservation price — which is just V . Furthermore, the subjective intention rule, if it is practically feasible, is strictly more efficient than either of the other rules. To see this, observe that if gross surplus $(V - C)$ is less than the seller's message cost S , then regime III yields the same result as regime I: no sale and no costs incurred. If gross surplus is greater than the seller's message costs, then regime III yields the same result as regime II: a sale following one message. Because regime I is more efficient than regime II when gross surplus is lower than the seller's communication cost,¹⁰⁷ and regime II is more efficient than regime I when it is higher,

107. More precisely, regimes I and II are equally efficient when gross surplus is less than the

subjective acceptance combines the best of the other two rules.

The intuition underlying this conclusion is straightforward. Neither a rule that holds silence always to be acceptance nor a rule that holds silence never to be acceptance is ideal under all circumstances. The former has the disadvantage of encouraging opportunistic and inefficient offers when the gross surplus from trade is slightly less than the cost of making an offer. The latter has the disadvantage of requiring two communications to be sent when one would suffice. The subjective-intention rule, when feasible, avoids both disadvantages. Under it the buyer can safely ignore the threat of opportunistic offers by silently rejecting, and can avoid the need for a redundant communication by silently accepting.¹⁰⁸

My analysis of the subjective-intention rule of section 69(1)(b), it must be admitted, rests on some highly special assumptions. Not only do I assume that the buyer's intention was costlessly verifiable *ex post*, but I also implicitly assume that early knowledge of whether the buyer has in fact accepted is of no particular value to the seller. Under these assumptions, giving force to the buyer's subjective intention effectively makes his response costless. In reality, though, a seller given early notice of acceptance may be able to arrange her affairs to perform at lower cost, and thus the buyer may be able to exploit the seller's uncertainty to his own advantage.¹⁰⁹ For this reason, this analysis is offered as much to provide an example of how the basic bargaining model might be varied, as for whatever light it may shed on the allocative effects of this curious doctrinal complication.

D. *Comments on the Model*

A complete treatment of the acceptance-by-silence doctrine would take us beyond the scope of the present discussion. Nonetheless, it is at least worth flagging some of the important strategic considerations

difference between message costs, and regime I is more efficient than regime II when gross surplus is greater than the difference between message costs but less than the seller's message cost.

108. This conclusion can also be viewed as an example of the general tradeoff between more and less centralized contract rules. The subjective-intention rule is relatively decentralized compared to its alternatives — it effectively delegates the decision of which rule should apply to the offeree, who has superior knowledge of the situation at hand. As a general matter, decentralization has the advantage of enabling heterogeneous individuals to minimize transaction costs in their personal circumstances. It has the associated disadvantage of raising the administrative costs and likelihood of error for the public authorities charged with enforcement. If public administrative costs are relatively low, as when the offeree's intention can be objectively ascertained *ex post*, the decentralized rule will be relatively more desirable.

109. The *Restatement* takes the position that the seller, having voluntarily placed herself in this position by virtue of inviting the buyer's silence, ought not complain that the resulting uncertainty is unfair. Whether this situation can be faulted on efficiency grounds, however, is a separate question.

that would arise in a fuller analysis. The foremost among them, in my view, are the costs of failed exchanges when the parties' reservation prices are not common knowledge, the uncertainty created when the offeree's response is delayed, and the possibility that the offeror can act strategically to influence the offeree's cost of responding. I briefly consider each of these in turn.

One striking feature of the full-information case analyzed in section V.B is that, in equilibrium, no offer is ever rejected. This is because the seller never wants to offer a price above the buyer's reservation price; since the buyer is sure to reject, she would be better off saving the cost of an initial communication. In actual markets, of course, the typical seller makes offers that are rejected by some buyers. This may be because the seller lacks perfect information about the buyer's willingness to pay, or because she deals with several buyers who differ in their reservation prices and is constrained to make the same offer to all. In either event, the perfect price discrimination implied by the simple model is often not possible.

The full-information analysis, accordingly, overlooks an important practical disadvantage of the silent-acceptance regime: under it buyers have to expend real resources to reject unwanted offers. In a world in which most offers are rejected, this disadvantage can be substantial and the common law rule looks more appealing. This is not the end of the story, however, because acceptance by silence also has a countervailing advantage over the common law, which is not present when information is perfect. Sellers who find it costly to make offers and who cannot perfectly price discriminate will typically set their price above their marginal cost of production. This is most obviously true for sellers with some degree of monopoly power, but it is also the case in more competitive markets.¹¹⁰ Such prices are socially inefficient for familiar reasons; they inhibit mutually beneficial sales to buyers whose reservation prices are above marginal cost but below the seller's price. Acceptance by silence helps counteract this efficiency loss from supracompetitive pricing, by increasing the likelihood of exchange.

The formal model also does not incorporate the strategic aspects of delay or of the duration of bargaining. It assumes that the buyer chooses once and for all whether to accept immediately upon receiving the offer, whereas in reality that decision takes place over a variable

110. The standard neoclassical model of perfect competition cannot be applied in this setting, since costly negotiation and communication imply at least some degree of economies of scale. Once the seller has made her offer to a potential buyer or group of potential buyers, her costs of doing so are both fixed and sunk. She must therefore charge a price above her average cost of production in order to break even. For further details, see A. Katz, *supra* note 81.

period of time. In many contexts, the buyer's ability to delay his response is an important strategic consideration. By delaying he may hope to elicit a more favorable offer from an anxious seller. More simply, he may speculate against the offer as an option, waiting to see whether market conditions or personal circumstances favor going forward with the exchange.

When the offeree's response requires some amount of time, the offeror cannot be sure what inference to draw from the offeree's silence. Under the strict common law rule, she will be uncertain whether the offeree has rejected or is merely deliberating. Under the silent-acceptance regime, on the other hand, she will be uncertain whether the offeree is deliberating or has decided to accept by silence. In those instances when it is uncertain which regime applies she may be completely unable to plan her affairs. Uncertainty is magnified when communication is imperfectly reliable, so that silence can also mean that a message has gone astray.

Most disputes over silent offerees that have actually found their way into the case law seem to arise out of just this sort of ambiguity. Offerors are most likely to be confused by silence when the silence is an extended one, and it is in just this case that the courts have been most willing to protect them.¹¹¹ In my view, these complications cut both ways. Which regime ultimately is preferable will depend both on the duration of time involved and on the costs of the resulting uncertainty, which are chiefly those of lost reliance and which may differ under alternative legal regimes. Nonetheless, a full analysis must take account of those complications.

Finally, the formal analysis assumed that the parties' costs of communication were exogenously fixed. In reality, buyers and sellers may have various opportunities to influence these costs, the most important of which is the seller's option to alter the buyer's cost of responding by the manner in which she makes the offer. For instance, the seller can vary the length of time in which to reply, or can specify a more or less onerous medium of response. Or she might even offer to defray a portion of the response cost through her own expenditures.

The seller has opposite incentives to influence the buyer's response cost under the two main rules we have considered. Under the common law, she wants to make the buyer's response cost as low as possible, since the lower it is the higher is the buyer's net reservation price, and the more he is willing to pay for the goods being offered. Accordingly, she will have the incentive to subsidize the response whenever

111. See the authorities cited *supra* in notes 85 and 90.

her resource cost of doing so is less than his.¹¹² Under the silent-acceptance regime, however, the seller has the incentive to make the buyer's response cost as high as possible, since the higher it is the more he is willing to pay for the goods offered. If unchecked, a creatively opportunistic seller might send the offer in such cover that the buyer is unlikely to discover it, give the buyer an unreasonably short time to reply, or require burdensome efforts to order to reject.¹¹³

For this reason, even a legal regime that recognized silence as a valid form of acceptance would have to place some limits on the procedural terms of the seller's offer, in order to prevent the more extravagant versions of opportunism.¹¹⁴ Such limits could not entirely eliminate the seller's motive to behave this way, though, and certainly could not provide the positive incentives to minimize communication costs that the common law does. As a result, the total costs of communication would in most instances be higher under a silent-acceptance rule.

Accordingly, the formal model probably underestimates the importance of offeror opportunism as an explanation for the common law rule. When significant, this risk can supply an efficiency argument for the offeree's right to be let alone, supplementing the language of fairness and reciprocity in which the right is ordinarily defended by its proponents. Indeed, this may be the strongest defense that can be offered for the common law rule.

VI. AN IMPERFECT INFORMATION MODEL: STANDARDIZED FORM CONTRACTS

Readers inclined to question the relevance of representing a complex reality with stylized models will no doubt consider the foregoing discussion and its assumption that the bargainers have full information

112. A mundane illustration of this is provided by the common practice among direct-mail marketers of including self-addressed envelopes in their circulars. It is almost certainly cheaper for the offeror to mass-produce and mail an envelope with her own address on it than it is for the offeree to take the time to find and address one specially. Prepaid postage, in contrast, is less widespread though still common. Given the current postal rates for business mail, it may be no cheaper for the offeror to prepay the postage, unless one counts the time cost to the offeree of rooting around in his desk drawer for a stamp. Unless the offeror has some cost advantage over the offeree in communication, there is no point to her arranging to subsidize his response.

113. As an extreme example, by providing that the offer will be deemed accepted unless the buyer takes out a full page advertisement to the contrary in the business section of a national newspaper.

114. In addition to *Restatement* § 69(1)(a)'s requirement that the offeree have reasonable opportunity to reject before being bound, for example, 16 C.F.R. § 425.1 (1990) (Federal Trade Commission regulation requiring an operator of a negative-option plan clearly to disclose the plan's material terms, and requiring that subscribers be given at least ten days in which to instruct the seller not to mail the offered merchandise).

overly simplistic. The main purpose of the current section, therefore, is to show how more realistic analyses might be constructed and to take some steps in that direction. This Part also illustrates the potential fragility of the game-theoretic approach — how a given set of predictions can depend sensitively on a particular description of the bargaining process. The exercise demonstrates that one should be wary of strong assertions in this area until substantial and detailed effort is devoted to studying the strategic structure of bargaining.

The substantive topic I discuss is the interpretation of fine-print terms in form contracts. As has long been recognized, in a mass-production economy the costs of individual negotiation are high and the terms of exchange need to be standardized in some fashion. Consequently, many who participate regularly in the market find it worthwhile to develop stereotypical printed forms which set out the terms upon which the drafter proposes to do business. This enables these participants to exploit scale economies in determining the provisions that maximize their surplus from the transaction, and in drafting the written agreement that embodies those provisions.

If standard forms are actually to economize on the costs of negotiation, each individual exchange cannot provide an occasion for re-opening every term of the bargain. The fact that some terms are not negotiable, on the other hand, does not mean no bargaining occurs. Typical forms leave blank space to be filled with the essential terms that are actually dickered — usually price, quantity, and the date of shipment or delivery — with the rest largely regarded as “boilerplate.” In general, one would expect the parties to adjust the negotiable terms in individual transactions depending on how the nonnegotiable terms affected their individual circumstances.

If both parties to the exchange completely understood the standard forms and also bore the full costs of negotiation, one might suppose they would use form contracts whenever the savings in negotiation costs outweighed the countervailing advantages of tailoring the exchange to their individual needs. Contracting parties, however, often purport to accept form offers without knowing or understanding the terms within. This is individually rational of them because the cost of considering each term is not trivial and many terms deal with the consequences of improbable contingencies. Additionally, the terms are often written in fine print to economize on paper and handling, and expressed obscurely or in legal or technical jargon, which raises the cost of becoming acquainted with them even further.

In this setting, contract bargaining would most appropriately be modeled as a game of imperfect information. The uncertainty is pri-

marily on the offeree's part, however; because the seller drafts the form (or at least chooses among several standard forms), he presumably has a clearer idea of its provisions. Moreover, imperfect information is not the same as no information at all; although buyers cannot know without reading what particular terms an individual seller has inserted into an offer, they may develop over time a reasonably reliable sense of what sorts of terms typically will be encountered in the market at large.

As I suggested earlier, imperfect information models are substantially more intricate than full-information models, and a variety of technical issues arise in their analysis. Accordingly, I gloss over a number of details and complexities in the argument here, since a more rigorous explanation would substantially detract from the exposition. Fortunately, much of the heuristic argument can be simplified without substantial distortion. For a rigorous presentation of the model, however, I refer the reader to a technical companion paper containing the formal proofs.¹¹⁵

A. *The Doctrinal Background*

Despite their evident advantages, form contracts have been received by courts and by legal commentators with ambivalence and, on occasion, with suspicion.¹¹⁶ In part, this arises from the association some lawyers have drawn between such contracts and the alleged presence of market power.¹¹⁷ The law's ambivalence toward form contracts, however, goes beyond a party's inability to negotiate all terms individually with the offeror. The law also faces a theoretical difficulty in finding the requisite mutual assent: on first blush it would seem that a person simply cannot freely agree to be bound by an obligation without knowing what she is agreeing to. Several solutions have been suggested to this problem. Each of them depends to a greater or lesser extent on using a fiction; each results in a different rule of interpretation.

115. See Katz, *Your Terms or Mine: The Duty To Read the Fine Print in Contracts*, 24 RAND J. ECON. 518 (1990).

116. See, e.g., Kessler, *Contracts of Adhesion — Some Thoughts About Freedom of Contract*, 43 COLUM. L. REV. 629 (1943); Rakoff, *Contracts of Adhesion: An Essay In Reconstruction*, 96 HARV. L. REV. 1174 (1983); Slawson, *Standard Form Contracts and Democratic Control of Law-making Power*, 84 HARV. L. REV. 529 (1971).

117. See, e.g., *Henningsen v. Bloomfield Motors Inc.*, 32 N.J. 358, 161 A.2d 69 (1960); Kessler, *supra* note 116, at 632 ("The weaker party, in need of the goods or services, is frequently not in a position to shop around for better terms, either because the author of the standard contract has a monopoly (natural or artificial) or because all competitors use the same clauses. His contractual intention is but a subjection more or less voluntary to terms dictated by the stronger party . . .").

One possible explanation is that in accepting a standardized form offer, the buyer agrees to delegate her authority to the seller to set whatever nondickered terms he pleases, subject to the broad limits imposed by doctrines such as fraud and unconscionability.¹¹⁸ The typical doctrinal shorthand for this view is that the buyer has a “duty to read” the contract; if she neglects this duty she waives her objection to the consequences.¹¹⁹ The “duty to read” is often identified as the position of the common law at the beginning of this century, though its harshness was undoubtedly mitigated by the effect of other doctrines. An obvious advantage of this rule is its relative ease of administration, since under it one need merely consult a contract’s written provisions to determine its content.¹²⁰

A less extreme version of this position, associated with the later views of Karl Llewellyn and endorsed by the *Second Restatement*, is that the buyer assents to the standardized terms of a form offer on the understanding that the terms are the same as those regularly accepted by others in similar situations. On this view, the law imposes customary limits on the seller’s discretion in order to guarantee the buyer equal treatment vis-à-vis other buyers. Among these limits are the incorporation of trade usage and course of dealing into the contract; the implied duty of good faith, which imposes standards of honesty in fact and commercial reasonableness; and the fuzzy constraints of the unconscionability doctrine, which protect the buyer against unusually oppressive terms.¹²¹ This approach results in greater administrative difficulty, for courts interpreting standard forms must determine the initially uncertain dictates of custom, good faith, and the like. Over the long run, however, as courts decide a variety of disputes, these criteria are likely to become more clearly understood.

A third approach would be to interpret the form contract, where possible, as containing the set of nondickered terms that is most in the buyer’s interest. Support for this can be found in the authorities that

118. As in the previous Part, I will speak as if the seller is the offeror, with no loss of generality.

119. See, e.g., *Merit Music Serv., Inc. v. Sonneborn*, 245 Md. 213, 221, 225 A.2d 470 (1965) (“the law presumes that a person knows the contents of a document that he executes and understands at least the literal meaning of its terms”); *National Bank of Wash. v. Equity Investors*, 81 Wash. 2d 886, 506 P.2d 20 (1973).

120. The administrative advantages of the duty to read have often been exaggerated, since the written terms of any contract contain ambiguities that are difficult to resolve without reference to the larger context of the parties’ bargain. Proponents of a strict duty to read, accordingly, have tended to combine that position with support for one of a variety of formalistic interpretative doctrines, such as the so-called “plain meaning” or “four corners” rules.

121. See RESTATEMENT (SECOND) OF CONTRACTS § 211(1) (1981) and comments thereto.

endorse construing contracts against the drafter.¹²² One might also describe this as implying a "duty to speak" on the part of the drafter, who risks being bound unfavorably if he does not somehow bring the content of the standardized terms to the consumer's attention. Proponents of this view argue that the seller knows both that the consumer will not read and that it is not reasonable for her to read, and that the seller, as creator of the terms, is in a position to bring them to the buyer's attention easily and cheaply.¹²³

Finally, a fourth approach would be to reject mutual assent altogether as the basis for enforcing standardized terms. On this view, the buyer assents only to the basic terms of exchange that she actually learns of. With regard to the other provisions, the parties have failed to reach agreement and the law should treat this just as if the parties had left the term open: by implying a term that is fair or reasonable under the circumstances.¹²⁴ This last rationale resembles the approach of Llewellyn and of *Restatement* section 206 in its references to custom and reasonable dealing. Its distinctive feature, however, is that it justifies enforcing implied terms by regulatory authority rather than by the parties' presumed intention.¹²⁵ For this reason, a court applying this rationale might consider itself justified in departing substantially from the parties' likely wishes in order to reach a socially desirable result. In the extreme, this view could justify dispensing entirely with freedom of contract and simply requiring a particular set of terms that the parties would not be free to negotiate around even if they bargained explicitly. This would at least provide some of the benefits of standardization, albeit on a centralized rather than decentralized basis. While mandatory terms have obvious costs when the population of buyers and sellers is heterogeneous, they do save on the costs of negotiations.¹²⁶

122. See, e.g., RESTATEMENT (SECOND) OF CONTRACTS § 206 (1981).

123. See, e.g., Rakoff, *supra* note 116.

124. Cf. RESTATEMENT (SECOND) OF CONTRACTS § 204 (1981): "When the parties to a bargain sufficiently defined to be a contract have not agreed with respect to a term which is essential to a determination of their rights and duties, a term which is reasonable in the circumstances is supplied by the court."

125. This argument is advanced, for instance, by Slawson, *The New Meaning of Contract: The Transformation of Contract Law by Standard Forms*, 46 U. PITT. L. REV. 21 (1984).

126. Modern American contract law is influenced by all these approaches. The traditional duty to read, however, has come under increasing attack in recent years, both by commentators and courts. Parties who accept without reading may escape being bound in a variety of circumstances; for instance, when the standardized form is illegible or printed in extremely small type, if the drafter has used a document, such as a claim check, that is not expected to contain contractual terms, or if the drafter misrepresents or fails to correct the other party's obvious misunderstanding of the writing. Courts now widely accept Llewellyn's argument that signing a contract does not by itself imply assent to surprising or unusual terms, and commonly limit such terms by construing ambiguous language against the drafter. Furthermore, courts have also been increas-

From a policy perspective, the question of what effect to give the terms of a standardized agreement can also usefully be viewed as a problem of economic efficiency. In situations where communication is costly, some standardization is desirable, but creates offsetting inefficiencies when contracting parties are heterogeneous. Can we obtain some of the benefits of decentralization by letting the drafter fix terms unilaterally, or would we do better to put limits on this discretion? Given the obvious benefits of standardization, which rule best balances the goals of saving on negotiation costs and choosing the terms best suited to the individual circumstances?

B. *Baird and Weisberg's Defense of the Duty To Read*

I take as a starting point a recent provocative article by Douglas Baird and Robert Weisberg, which addresses these very questions.¹²⁷ To be accurate, they actually discuss a more complicated problem — the so-called “battle of the forms,” which arises when both parties to a transaction use standardized but inconsistent forms, and it is necessary to decide which will prevail.¹²⁸ Baird and Weisberg argue that the most efficient policy is a formal and decentralized rule that defers to the language of the later form.

Traditional American common law arguably provided such a rule — the so-called “mirror image rule.” Its theoretical rationale was that a responding form could not be an acceptance unless it mirrored the offeror’s form in all particulars. A later inconsistent form could therefore only be interpreted as a rejection, and hence a counter offer. If the parties attempted to go ahead with the deal notwithstanding the

ingly willing to interfere with standardized terms on external substantive grounds such as unconscionability and good faith, since they view the freedom of contract considerations that ordinarily impede such external doctrines as largely absent in the form-contract setting. *See, e.g.,* Williams v. Walker-Thomas Furniture Co., 350 F.2d 445 (D.C. Cir. 1965); *Henningsen v. Bloomfield Motors Inc.*, 32 N.J. 358, 161 A.2d 69 (1960).

In addition, statutory developments have substantially cut back on the traditional duty to read. The Uniform Commercial Code imposes a duty to speak with respect to a variety of contract terms including warranties of merchantability and fitness, and implies an obligation of good faith in the performance and enforcement of every contract within its scope. U.C.C. § 2-316 (1977) (“Exclusion or Modification of Warranties”); § 1-203 (“Obligation of Good Faith”). Other state and federal statutes and administrative regulations specifically directed toward consumers create similar obligations. *See, e.g.,* the Magnuson-Moss Warranty Act, 15 U.S.C. §§ 2301-2312 (1988), and associated FTC regulations at 16 C.F.R. §§ 701-703 (1990); and various sections of the Uniform Consumer Credit Code.

127. Baird & Weisberg, *supra* note 5.

128. Inconsistency between the forms can also give rise to another sort of dispute, in which one party tries to renege on the deal before performance, arguing that no contract was ever formed. *See, e.g.,* *Poel v. Brunswick-Balke-Collender Co.*, 216 N.Y. 310, 110 N.E. 619 (1915). Few disputes of this sort, however, have been reported in recent years, probably because § 2-207(1) of the Uniform Commercial Code makes it clear that a contract exists whenever there has been a “definite and seasonable expression of acceptance.”

inconsistency, their doing so would be taken as an acceptance by conduct of the offer contained in the later form, which then governed the bargain.

The mirror image rule has been supplanted at least in sales cases by section 2-207 of the Uniform Commercial Code. While the interpretation of section 2-207 has been the subject of considerable controversy, the most widely influential view is that section 2-207 directs courts to ignore the forms when they conflict, and instead to apply the default or "off-the-rack" terms of U.C.C. Article 2 to fill in any resulting gaps. Such default terms for the most part invoke contextual standards such as reasonableness, custom, or trade usage.¹²⁹

Baird and Weisberg accept this majority interpretation of section 2-207. They argue, however, that the resulting rule is substantially less efficient than the mirror image rule. This is the case, in their view, because the off-the-rack standards are burdensome for courts to apply, and because they impose substantial costs on buyers and sellers whose circumstances do not fit the standard mold. In contrast, the mirror image rule makes it easier for individual parties to choose terms best suited to their particular situation.

The key to Baird and Weisberg's thesis is their claim that the mirror image rule promotes efficiency in negotiation. They acknowledge that the prospect of firing the last shot may encourage parties to insert inefficient but unilaterally advantageous terms into their forms. They argue, however, that a rule giving legal effect to standardized forms will induce some parties to read those forms, and that the prospect that some parties will read will induce the drafter to moderate his terms. Additionally, the buyer's knowledge that a form contains one-sided terms will reduce her willingness to enter into the deal and the price she is willing to pay, further reducing the gain from opportunistic drafting:

[T]he mirror image rule, compared to other possible approaches, takes maximum advantage of these market forces. It makes printed forms matter more by encouraging or even forcing parties receiving documents to read them more carefully. The rule thereby encourages parties sending documents to make them attractive to their intended recipients . . .

. . . .

[T]he seller that does not moderate its self-interest in drafting its forms will lose the opportunity to deal with at least some buyers on the

129. See, e.g., U.C.C. §§ 2-305 (price); § 2-306 (quantity); § 2-308 (place of delivery); § 2-309 (time of payment). I am deliberately glossing over the particulars of the debate over § 2-207, since they are incidental to my purpose. For an excellent discussion of the section that also provides practical guidance for contracting parties, see generally J. WHITE & R. SUMMERS, *UNIFORM COMMERCIAL CODE* § 1-3 (3d ed. 1988).

terms in that form. Its rational *self-interest* will therefore be to design the terms in its form in the *mutual interest* of the parties.

Under the mirror image rule, then, each party, in designing its form for a particular type of transaction, has an incentive to hypothesize the terms that the parties would have settled upon had they dickered over them.¹³⁰

Under the U.C.C., they argue in contrast, a seller contemplating sending a one-sided form will have no incentive at all to moderate his terms, since there is no penalty for not doing so and a possibility that the off-the-rack terms will support the one-sided terms.¹³¹

The logic of the Baird-Weisberg argument, if valid, ought to carry over in straightforward fashion to those simpler exchanges in which only one party uses a standardized form.¹³² If Baird and Weisberg are correct in their characterization of form-contract bargaining, then modern doctrines that limit the drafter's control over contract terms also eliminate the parties' incentives to negotiate optimal terms. It would follow that the modern trend away from the duty to read is misplaced from the standpoint of efficiency.

Baird and Weisberg's claim has some heuristic appeal in its resemblance to familiar economic arguments that sellers will be led by their desire to maximize profit to offer optimal contract terms or product attributes. Unfortunately, their claim is not well-grounded in any precise account of the bargaining process, and as a result the recipient's incentives to expend resources reading form contracts are obscured. Instead, Baird and Weisberg simply assert that it will be in the interest of a significant minority of recipients to read the forms sent to them before deciding whether to accept. Their entire defense of this assumption is the following:

Merchants, however, probably do look for, and pay attention to, preprinted terms that may prove important in the transaction, including terms, such as warranty disclaimers, that turn up so frequently as the subjects of reported battle of the forms litigation. [Footnote:] The only recent empirical study of which the authors are aware was made in England, where the mirror image rule appears to survive. . . . That study suggests that parties read at least the more important of the fine-print terms, such as warranty disclaimers. Based on a survey of only 19 engineering manufacturers, the study must be regarded as merely

130. Baird & Weisberg, *supra* note 5, at 1255, 1257 (emphasis in original).

131. Baird and Weisberg also address objections that the mirror image rule would encourage an endless battle of the forms as each party tried to fire the last shot, and that the rule unfairly allows parties to renege on deals before performance. *Id.* at 1252-53.

132. Their analysis would fail in this context only if the opposing party's opportunity to send her own standardized form in response exerted an independent restraint on the drafter's discretion. While Baird and Weisberg mention this possibility incidentally, it does not play a central role in their argument. *Id.* at 1257.

suggestive.¹³³

While this empirical claim is hardly compelling (Macauley's well-known and earlier findings to the contrary being at least as persuasive),¹³⁴ an equally serious problem is that good theoretical reason exists to doubt that the number of recipients who actually read forms will be sufficient to encourage drafters to provide efficient terms. For one matter, Baird and Weisberg ignore the incentive for recipients to free ride. Since reading and understanding forms is costly, and since the benefits of efficient terms are enjoyed by the population as a whole, individual recipients might rationally sit back in the hope that others will keep the drafters honest. Similarly, no individual recipient would spend resources on reading if she believed that all drafters were using roughly comparable terms. At least some drafters would have to be using suboptimal terms else nothing would be learned by reading.¹³⁵

To be fair, Baird and Weisberg would probably respond that their claim regarding the duty to read is not that all drafters would be induced by the threat of detection to include optimal terms; merely that most would, or that at least most would be induced to include terms that are not so suboptimal as to outweigh the inefficiency of centrally mandated terms. But even this weaker claim turns out to be problematic upon more careful inspection. In fact, the formal model I am about to present suggests that reading standardized contracts may not be rational at all.¹³⁶

Before presenting the formal model, I want to be precise about the claim I am making with it. I am not saying that the drafters of form contracts have no economic incentives whatsoever to avoid self-serving contractual provisions — merely that the threat that buyers will read is not one of them. In many though not all instances, such an incentive is provided by the drafter's desire to maintain a good commercial reputation, since customers surprised *ex post* by oppressive

133. *Id.* at 1253 & n.87 (citing Beale & Dugdale, *Contracts Between Businessmen: Planning and the Use of Contractual Remedies*, 2 BRIT. J. L. & SOC'Y. 45, 50 (1975)) (citation omitted).

134. Macauley, *supra* note 25.

135. Cf. Gordon & Kornhauser, *Efficient Markets, Costly Information, and Securities Research*, 60 N.Y.U. L. REV. 761 (1985) (explaining similar argument against pure version of the efficient market hypothesis in financial economics).

136. The argument can be taken as an extension of the well-known analysis of markets with asymmetric information by Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 488-500 (1970). As Akerlof and others have argued, market equilibrium is inefficient when no institution provides information about individual attributes of heterogeneous buyers and sellers. One particular institution that has been widely suggested to serve this purpose is the warranty contract. Warranties and analogous promises can only provide a solution to the lemons problem and other types of adverse selection, however, if individuals find it in their interests to learn about the terms of exchange. The model shows that they may lack incentive to do so when communication is costly.

fine-print terms are unlikely to furnish either repeat or referral business in the future. For several related reasons, however, I do not consider reputation or goodwill in the following discussion, assuming them to be insufficient to induce the seller to provide the optimal contract terms.

In the first place, I want to focus my attention on Baird and Weisberg's primary justification for the duty to read: that it encourages efficient drafting by establishing a credible threat that buyers will read the fine print. While they also argue that reputational considerations help to encourage efficient commercial behavior, I think this plays only a secondary role in their specific defense of the doctrine. Rather, the reputational contention is offered more to support their overall argument for private freedom of contract over centralized regulation.

Second, legal rules for interpreting contracts matter primarily when the effects of reputation are weak. In those situations in which the desire for future business is sufficient to induce the seller to provide efficient terms, it will often also induce the parties to settle any disputes between them without consulting the law, since the private sanctions resulting from the lost relationship will overshadow any official remedy available. On the other hand, if exchange is largely anonymous, or if the parties transact business only discretely and infrequently, or if for whatever reason (for instance, impending bankruptcy) the drafter is concerned largely with the short term, the extent to which buyers read the fine print and the consequences the law attaches to it become important.

Third, even if legal sanctions are important to the drafting party, his concern for reputation is likely to take the form of waiving or declining to enforce one-sided terms *ex post*, rather than excluding them from the written contract *ex ante*. Having the terms in the writing gives a seller the discretion to invest in goodwill in circumstances where it is most valuable to do so, while leaving him the option of enforcing the contract to the letter at other times. This flexibility can be especially vital for the many provisions that deal with the consequences of improbable contingencies, since the contingency's actual occurrence may mean that circumstances have substantially changed. Furthermore, the goodwill that comes from waiver *ex post* may be a more valuable kind, because insisting on less than one's demonstrable legal rights has particular salience. In contrast, a seller may reap little credit for offering a proconsumer standard form that no one ever reads.

The fourth and final reason stems from my methodological program. A seller's concern for reputation should be understood from a

game-theoretic perspective as a rational response to repeated strategic interaction with buyers.¹³⁷ Nevertheless, understanding the parties' incentives in the one-shot interaction is an essential prerequisite to understanding their incentives in the more complicated repeated case. Developing a reputation for reasonable contract terms would be unnecessary, for instance, if all buyers read the fine print, and would be impossible if they took no interest in the fine print at all.

Accordingly, the formal model below focuses on the essential features of the form-contract problem: an efficiency cost from suboptimally chosen contract terms, so that negotiation can realize some gain; a positive cost associated with reading others' form contracts or explaining one's forms to others, so that explicit negotiation is best avoided if possible; and the presence of heterogeneous buyers and sellers in the market, so that a social planner setting the required terms cannot achieve the optimal social outcome in every case. As in the previous Part, I ignore the costs of contract enforcement. I also assume away the possibility of counteroffers or other related communications (and in the form contract setting the take-it-or-leave-it assumption may seem more plausible). Even this minimalist account, however, will show Baird and Weisberg's story to be incomplete.

C. *A Formal Model of the Duty To Read*

As before, we start with the strategic structure — the parties' potential strategies and the relevant sequence of events — which is depicted in the game tree of Figure 5. I continue to suppose that the transaction involves the sale of a fixed quantity of some good, and that the bargaining involves a single seller and a single buyer, who may be drawn from a population of various types.¹³⁸ The seller initially offers an exchange to the buyer, which may or may not be in standardized form.

For simplicity, I will assume only two terms in the offer: price and quality. In reality, of course, any standardized offer will include terms of two sorts: some ascertainable on their face, and some that are ascertainable only with a positive cost. I refer to these as *patent* and *latent* terms. Price should be interpreted as standing for all patent terms, and quality as standing for all latent terms. The contract's

137. See, e.g., Kreps & Wilson, *supra* note 63; Milgrom & Roberts, *supra* note 63.

138. Alternatively, the model may be interpreted to apply to a seller who simultaneously makes an offer to an entire population of buyers. In one interpretation, the buyer's characteristics are a random variable drawn from the possible distribution of types in the population at large; in the other, the seller deals with all types of buyers at once in proportion to their frequency in the population. Nothing turns on which interpretation one selects.

quality may include factors such as the extent of any warranty, the extent of seller's freedom to cancel the contract in unforeseen circumstances, and the like. Price is denoted by the letter P , and quality is denoted by the letter X . It may be helpful to think of quality as varying along a single dimension, such as a warranty clause that could range from "as is" to an unconditional guarantee, although this is inessential to the analysis. The analysis would follow along analogous lines with multiple dimensions of patent and latent terms. The seller may, if he wishes, spend the resources necessary to make quality as well as price costlessly ascertainable. He may do this by going to the trouble of bringing all relevant terms to the buyer's attention, or perhaps by promising to reimburse the buyer for any expenses she incurs in evaluating the offer. Such an attempt will of course raise the seller's marketing costs. The amount the seller must spend to reveal quality to the buyer, denoted as S , must be incurred independently of whether the buyer accepts the offer. The cost of making a form offer is assumed to be zero.

If the seller goes to the effort of making all terms patent, the buyer then decides, based on both price and quality, whether she wants to accept or reject. If the seller does not go to this effort, then the quality term will remain latent and the buyer will then have to decide, in light of the price and her expectations regarding the probable quality the offer is likely to contain, whether to inspect it more carefully. I refer to this process of inspection as "reading," although it may also include expenses such as consulting an attorney to determine the meaning of technical language. Reading the contract requires the buyer to expend a positive amount I denote as R , which must be incurred whether or not she purchases.¹³⁹

If the buyer does not read, she must decide whether to accept or reject the offer on the basis of the price alone, combined with her expectations about the contents of fine print. I assume that these expectations are rational in the Bayesian sense discussed earlier; in other words, they roughly correspond to the actual frequencies of the terms that sellers choose to offer in equilibrium. Conversely, if she does read

139. The cost of reading should be understood as the net cost after subtracting out any entertainment value (probably an empirically unimportant consideration); I assume no one so enjoys reading standardized forms that they would actually choose to do so apart from evaluating the proposed exchange. I am going to ignore the prospect that the buyer can choose to spend a variable amount reading the contract, with more effort yielding better information. This does not make any difference to the argument. Similarly, the cost of reading could vary among buyers without affecting the argument, so long as it were positive for all except a trivial fraction of them. See Katz, *supra* note 115.

Notation:
 $V(X)$: buyer's value for good of quality X
 $E[V(X)]$: buyer's expected value for good of uncertain X
 $C(X)$: seller's cost for good quality X
 P : sale price of good
 S : seller's cost of sending individual offer
 R : buyer's cost of reading form offer

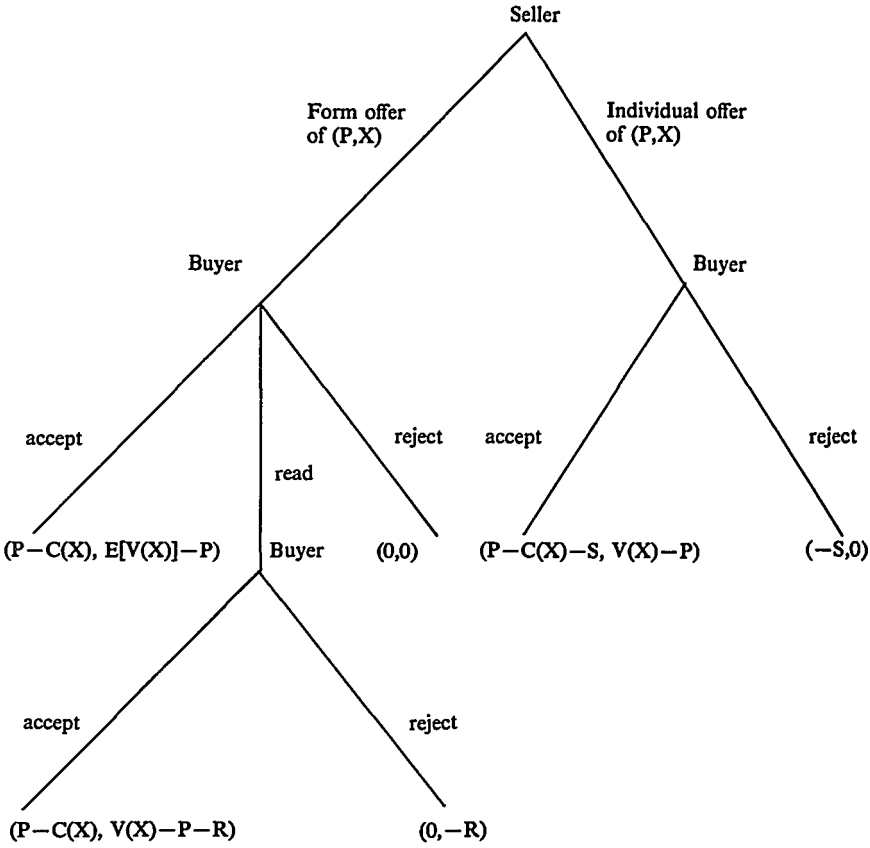


Figure 5. Form-contract bargaining under a duty to read

the form and learns the quality it specifies, she can then decide whether to accept or reject on a fully informed basis.

The seller's production cost depends positively on the level of quality promised, so he would like to have that term as low as possible for any given price and quantity of sales. The buyer's willingness to pay, on the other hand, depends positively on quality and she would like to have it as high as possible, other things remaining equal. I refer to the seller's cost as $C(X)$ and the buyer's reservation price as $V(X)$, where the notation is intended to represent the dependence of price on quality. Of course, the buyer will be willing to pay a higher price for a good of higher quality only if she knows or has reason to believe it actually is of higher quality. If the offer is a standard form and the buyer does not read it, the price she is willing to pay depends on the good's *expected* quality. In this case her reservation price is denoted as $E[V(X)]$.

The extent to which reservation price rises with quality may vary among individual buyers. For the sake of exposition, however, I initially assume that all buyers are equally quality-sensitive; relaxing this assumption, which I will do later,¹⁴⁰ makes no fundamental difference to the problem. The extent to which cost rises with quality similarly can vary among sellers. I do assume that a buyer's willingness to pay for quality has diminishing returns, so that successive increases in quality produce successively smaller increases in her valuation. Similarly, the seller faces increasing costs, so that successive increases in quality produce successively larger increases in production cost.

These last two assumptions imply that a uniquely efficient level of quality exists, which maximizes the potential gross surplus $V(X) - C(X)$ from exchange, for any particular buyer-seller pair. Under full information, if Coasian bargaining were possible, the parties would do best to set the quality level where the buyer's willingness to pay for an incremental increase in quality exactly equaled the seller's cost of providing it. I denote this efficient level as X^* , and denote the valuation and cost when quality is efficiently chosen as V^* and C^* .

A description of the parties' payoffs for each possible configuration of actions completes the specification of the bargaining. Start with the situation, illustrated on the right-hand branch of Figure 5, where the seller notifies the buyer of both price and quality. If the buyer accepts, the seller nets $(P - C(X) - S)$ (price less production and selling costs), and the buyer nets $(V(X) - P)$ (valuation less price). If the buyer rejects, the seller loses S , since selling cost is sunk whether or not a sale

140. See text accompanying note 146 *infra*.

occurs, and the buyer comes out even. If the seller sends a form offer, as depicted on the left-hand branch of Figure 5, four distinct possible outcomes arise. The buyer can reject before reading, in which case neither party gains or loses anything. The buyer can read and then reject, in which case the seller nets zero and the buyer loses R , the cost of reading. The buyer can read and then accept, in which case the seller nets $(P - C(X))$ and the buyer nets $(V(X) - P - R)$. Or finally, the buyer can accept without reading at all, in which case the seller nets $(P - C(X))$, and the buyer's position is an uncertain one. She does not know at the time she accepts what quality she will get. Her best guess, however, is that she will get the average level of quality available in the market; she has no reason to think this seller's quality is any better or worse than average. Accordingly, if she buys without reading, she expects to net $(E[V(X)] - P)$ — the value she attaches to a good of average quality, less the price.

We may now solve this bargaining game. Since the game is one of imperfect information, the method of backwards induction used in the previous Part does not apply. The method of solution, however, is closely analogous. Consider the alternatives of individual and form offers in turn.

If the seller presents the buyer with an individualized offer, he will have incentive to provide the efficient level of quality. The argument for this is as follows: for any quality level, a fully informed buyer will accept if and only if her valuation $V(X)$ exceeds or equals the price P . Hence the seller should set price just equal to $V(X)$, earning a return of $V(X) - C(X) - S$. This return differs from the gross surplus only by the constant selling cost S . Since selling cost does not vary with the quality of the good, the seller can maximize his return by maximizing the gross surplus — that is, by choosing the efficient level of quality X^* . The explanation for this result is that since the seller gets to make a take-it-or-leave-it offer, he captures the entire surplus from the exchange. Hence, it is in his interest to maximize that surplus.

The case in which the seller makes a standardized form offer is more complicated. Nonetheless, it follows from the strategic structure that the buyer will not read the offer and the seller will choose the lowest possible quality level. A proof by contradiction provides the easiest way to see this. Assume *arguendo* that buyers sometimes decide to read forms when presented with a given price of P , and I will show why this cannot be an equilibrium.¹⁴¹ The only reason they

141. The buyer's decision whether to read could in principle be conditioned on the price or other patent terms. As I argue momentarily, however, this possibility makes no difference to the buyer's optimal strategy, so I treat price as fixed in the discussion.

would read, let us recall, is if sellers provided different quality levels in their forms. If all sellers behaved identically, in equilibrium buyers would realize nothing can be learned by reading.¹⁴²

Consider the quality level that a seller would specify in a form offer under these circumstances. The seller takes the proportion of buyers who read as given, because the choice of a single seller is not going to alter the buyer's beliefs about the frequency of contract terms to be encountered in the market.¹⁴³ Furthermore, he need only concern himself with the reaction of the buyers who read; because the rest never learn about the actual quality offered until it is too late and are insensitive to it in their purchasing decision.

For any given price, however, any informed buyer requires some minimal level of quality in order to accept the offer, which I call the *reservation quality level*. The reservation quality level for any offer is just that amount of quality necessary to provide the buyer with a valuation equal to the price being asked, and make her barely willing to accept. The lower the price, the lower is the reservation quality level. I denote this level as $\bar{X}(P)$, where the notation is intended to represent the fact that reservation quality depends on price.

Consequently, a maximizing seller would never want to choose above $\bar{X}(P)$. To do otherwise would unnecessarily sacrifice profits, because a decrease from any higher quality would reduce costs and sacrifice no sales. But, since reservation quality is just that level where the informed buyer's valuation exactly equals the price, she gains no surplus from exchange. Instead, a buyer who reads must therefore wind up with a net loss of R — the costs spent becoming informed — if the seller is maximizing. Such a buyer could have done better than this (in fact, could have lost nothing) by simply rejecting the offer out of hand. In other words, the buyer would have been better off not reading in the first place. Yet this contradicts the assumption that reading was a rational strategy for her, and implies that buyers cannot read in equilibrium.

If buyers fail to read the fine print, sellers writing standardized forms have every incentive to choose the quality level as low as possible (recall that reputation is excluded from the model). The specific

142. Formally, in this case $E[V(X)] = V(X)$, so that a rejecting-out-of-hand strategy plainly dominates a reject-after-reading strategy, and accepting without reading dominates accepting after reading. The point can be generalized. If information is costly, the only reason to gather it aside from direct consumption value is to inform some decision to be taken afterwards. If one expects to act the same way whatever one learns, then it is better to save the resources and just take the action.

143. Because of the sequential structure of the game, sellers cannot commit to any particular distribution of quality before buyers decide whether to read.

quality provided would be constrained either by technical considerations, or by whatever other legal doctrines the courts would apply to protect a nonreading buyer. Denote this minimum quality level as X_0 and the seller cost and buyer valuation associated with it as C_0 and V_0 . Since buyers can anticipate that all sellers in equilibrium using form offers will choose minimum quality, the most that they will be willing to pay is V_0 . This is the price, therefore, that sellers will offer when they use standardized forms.

Now a seller can earn at most $(V_0 - C_0)$ from a form offer, and we already saw that he could earn $(V^* - C^* - S)$ by making an individual offer. The difference between consumer valuation and production cost is at least as large (and generally larger) when quality is set optimally than when it is set minimally. It follows that the seller will choose to make an individual rather than a form offer only when the increased revenues from doing so, $(V^* - C^*) - (V_0 - C_0)$, exceed the cost S of making the latent terms patent. Since sellers will vary in the costs they face in doing this, they will prefer to make individual offers when their marketing costs are low, and will prefer form offers when their marketing costs are high. This completes the derivation of the equilibrium.

To summarize the analysis: Under a legal regime that places the duty to read form contracts on the buyer, reading contracts is not a rational strategy for buyers in equilibrium. As a result, providing any quality above the minimum possible level is not a rational strategy for sellers who use form contracts in equilibrium. This does not mean that no quality above the minimum possible level will ever be provided under a duty to read. On the contrary, since buyers are willing to pay a higher price for increased quality once it is brought to their attention, it may well be in sellers' interests to provide the efficient level of quality and to alert buyers to the fact that they have done so.¹⁴⁴ But this will only occur if sellers bear the cost and effort of making the quality terms of the offer patent.

The intuition underlying this perhaps surprising result stems from the specific sequential structure of the bargaining. In particular, it arises from the quite ordinary fact that buyers must decide whether to spend resources reading a standardized form before they know what latent terms it contains — and that sellers have the motive to take advantage of this, and no means to commit themselves not to. Because the costs of becoming informed are sunk once incurred, a buyer

144. Or, if there are multiple aspects of quality, the seller may wish to go to the trouble to communicate some of them to the buyer but not others, depending on the cost of doing so credibly.

can wind up in a situation where, having been informed, she just barely wants to accept, while wishing that she had not bothered to become informed in the first place. Indeed, if she did read, the seller's optimal strategy would be to place her in precisely this situation.¹⁴⁵ Since she can anticipate this turn of events, she prefers not to read instead of reading just to get into the position of taking a barely acceptable deal.

I have so far assumed that all buyers attach the same valuation to quality, and that sellers know these valuations when they set the contract terms. If some buyers were more sensitive to quality than others, one might surmise that the relatively sensitive buyers would read form contracts even if the less sensitive do not. Furthermore, when buyers are heterogeneous, sellers could not be assured of setting price or quality exactly at the buyer's reservation level, and would want to offer a price that low-valuation buyers would reject, in order to get a higher price from high-valuation buyers. Accordingly, the precise line of argument I used above to show that buyers will not read must be modified.

Relaxing the assumption that buyers identically value quality, however, does not make any difference to the basic argument. For a rigorous explanation why this is so, I refer the interested reader to the technical companion paper.¹⁴⁶ The nature of the reasoning, however, can be easily outlined. Again, the proof is by contradiction. Suppose that some buyers, possibly with differing valuations of quality, choose to become informed. Of this group there must be one whose reservation quality level is highest (or at least as high as anyone else's); call her the *most discriminating buyer*. Clearly, a profit-maximizing seller should set quality no higher than the reservation level of the most discriminating buyer. But then that buyer winds up worse off than if she had just rejected the offer out of hand (just as all informed buyers did in the simpler story that assumed all of them equally discriminating). She therefore decides not to read, and drops out of the group of informed buyers. We can then find a most discriminating buyer among those remaining, and repeat the argument. Eventually, the group of

145. This feature is what distinguishes the form-contract setting from other market settings in which some expenditure on information is rational. For instance, in financial markets there is ordinarily no actor in an analogous position to the contract drafter here who can set the terms of trade to expropriate the costs expended in market research. There are competitive market situations, however, in which similar phenomena can arise. See, e.g., Diamond, *A Model of Price Adjustment*, 3 J. ECON. THEORY 156-68 (1971).

146. See Katz, *supra* note 115. That paper also examines a variety of other issues not considered here, including the effects of applying other legal rules to the interpretation of form contracts, and the relative social efficiency of such differing rules.

informed buyers dwindles to zero and the proposed equilibrium unravels.

Put another way: the most discriminating buyer cannot find reading to be an equilibrium strategy, since if sellers are maximizing she is sure to discover *ex post* a quality term that at best equals her reservation level. Hence, the set of informed buyers cannot include a most discriminating member. But the only way this can occur is if the set is empty — that is, if no buyer reads.

The only circumstance in which the group of informed buyers would not unravel is where a nontrivial proportion of buyers faced no positive cost in becoming informed. Such buyers would still read even if quality were reduced to their reservation level, and sellers might then be induced to provide quality sufficient to get them to purchase.¹⁴⁷ It seems unlikely that the size of this group would be empirically significant, however, and even if it were, such buyers are likely to be particularly unrepresentative of the population of buyers as a whole. Individual buyers whose costs of reading form contracts are zero or negative may well be unusually able to protect themselves against one-sided terms generally; hence the terms they would demand may not be optimal for the larger population.

D. *Comments on the Model*

A caveat to the foregoing analysis is in order: the argument made above regarding product quality does not apply to all nonprice attributes of exchange; it only applies to those nonprice attributes that are costly for all sellers to provide. This is what makes the buyers' and sellers' interests strictly adverse, so that all sellers prefer to choose minimal quality when buyers are uninformed. For some contract attributes, however, such as the timing of delivery or provisions for commercial arbitration, the interests of at least some buyers and sellers may not be opposed. In this case sellers could differ in the latent terms they prefer, and it could pay buyers to read form contracts to see which of these sellers they were dealing with. But for terms such as warranties, it is plausible to assume that increases in quality always increase the seller's cost. As a result, unless the buyers are specifically informed otherwise, they will find it rational to assume the worst about any latent terms rather than to read.¹⁴⁸

147. Even this is not assured. If the group of informed buyers is small relative to the population of uninformed buyers, sellers might be willing to sacrifice all sales to informed buyers in order to obtain the cost savings from debasing quality for everyone else.

148. It is also essential that the quality term be continuously adjustable, or at least approximately so, else it will not necessarily be the case that the seller wishes to set it no higher than the reservation level of the most discriminating buyer. Continuity is a plausible assumption for con-

In addition, the outcome of the formal model is the same under the duty to read as it would be under a legal rule that imposed a duty to speak on the seller and also implied minimal quality from the seller's silence. Under such a regime, buyers would not be willing to pay more than V_0 their valuation for a good of minimal quality, in response to a form offer. Similarly, sellers who found it worth their while to make the quality terms patent would have the incentive to provide optimal quality. Further, only those sellers with sufficiently low marketing costs would want to do this; the others would find it more profitable to remain silent and earn the profits to be earned from selling low-quality goods.

In actual practice, the seller's silence is often held to imply terms other than those systematically most favorable to the seller, as illustrated, for example, by the implied warranty of merchantability for the sale of goods under the Uniform Commercial Code. In this circumstance, the seller will go to the trouble of contracting around the implied quality terms if and only if the costs of doing so are less than the increased exchange surplus so obtained. Still, the identical result could be obtained under a duty to read regime that achieved the same default terms through separate doctrinal constraints — such as a rule that selling unmerchantable goods was presumptively unconscionable.

It follows from the formal analysis that the practical differences between a rule that implies a duty to read and a rule that implies a duty to speak may be less than legal commentators have commonly supposed. In particular, the aspects of the law that matter primarily for the equilibrium outcome are the level of latent contract terms legally implied from the seller's silence under a duty to speak, and the minimum level of latent terms tolerated under a duty to read. It may not matter much which party formally bears the risk that the seller's terms are not communicated to the buyer, since any communication about them must effectively take place through the seller's efforts.

When contract terms are latent or otherwise costly for the recipient to determine, courts or regulatory authorities might be able to improve the efficiency of private bargaining by providing implied warranties, by refusing to give effect to at least some fine-print terms, and by construing instruments against the drafter. This will be the case if the terms implied are more efficient than are those one-sided

tract attributes such as warranties or liquidated damages, but other provisions may be available only in discrete alternatives. For example, many actual form-contract disputes arise out of clauses that require disputes between the parties to be settled by commercial arbitration rather than by the courts. Ambiguous contract language regarding which alternative is to apply, however, may make even those provisions effectively continuous.

terms that would be chosen by an opportunistic drafter. Whether or not courts are capable of actually implementing this is impossible to tell *a priori*, but requires empirical investigation. It should be stressed, however, that the test for whether implied warranties can improve the efficiency of bargaining is *not* whether the cost of reading is less than the cost of speaking. Such a comparison is misplaced, since under the conditions I have discussed reading is not an effective substitute for speaking. The appropriate test, rather, is whether the cost of reading is nontrivial for most recipients.¹⁴⁹

I believe that the reason that Baird and Weisberg missed the preceding line of analysis is that their informal and heuristic argument did not precisely specify the sequential structure of bargaining. As a consequence, they overlooked the fact that the decision to spend resources becoming informed must precede the information that reveals whether it is worth doing so, and that the drafters of form contracts have the incentive to take advantage of this. But it is just this fact that makes reading irrational. If the cost of reading form contracts could be recovered after the fact, the Baird and Weisberg analysis would be correct. In practice, those costs generally are sunk, and hence vulnerable to appropriation *ex post* by an enterprising seller who recognizes this *ex ante*.

I do not mean to criticize Baird and Weisberg too harshly, nor do I think that the model presented here is the last word on form-contract bargaining. In my opinion, they identified the correct economic issue — whether giving offerors control over the terms of the contract does a better job of minimizing transaction costs than does a centralized presumptive standard — and I am more in sympathy with their approach than with that of commentators such as Rakoff and Slawson who focus exclusively on considerations of equity and consent in their criticism of legal doctrine. This is so even though my ultimate policy conclusions are probably closer to that of the latter authors.¹⁵⁰

My main point, instead, is to emphasize the risk of using intuition and informal heuristics to make predictions about bargaining in com-

149. Compare Posner's suggestion that the test for enforcing fine-print clauses be "whether the wording, placement, or format of the clause is such as to impose excessive search costs on prospective customers." R. POSNER, *ECONOMIC ANALYSIS OF LAW* 85-86 (2d ed. 1977).

150. Both Rakoff and Slawson, *supra* note 116, as well as other critics of standardized form contracts, might well argue that my approach attributes too much rationality to potential buyers and sellers, and that the dominant practical objection to such forms arises from parties' incompetence in dealing with them. I am certainly prepared to accept irrationality in bargaining as a significant empirical phenomenon, especially in the consumer setting, although I would like to see some more attempts actually to measure the extent of its importance. It ought to be recognized, however, that it is not necessary to rely on such factors in order to justify the policies they recommend.

plicated settings, since the precise information available to the parties and the sequence of decisions can matter greatly to the result. Only after intensive study of particular institutional facts will we acquire theories of bargaining that can reliably predict, and the process will inevitably be an incremental one. Formal analysis of the sort illustrated here will be a necessary tool if we are to know just which institutional facts are relevant to our purposes.

CONCLUSION

This article has ranged more or less freely over a number of related topics in contract law, in the economic analysis of law, and in applied game theory. It is intended as speculative and as an argument for the style of analysis of which it is an example. The basic contours of its thesis, nonetheless, can be summarily stated: The lack of an adequate theory of bargaining presents a central and fundamental problem for the economic analysis of law. In spite of this, law-and-economics scholars have devoted relatively little attention to analyzing the contract doctrines that determine the institutional framework within which negotiation takes place. Instead, they have focused their consideration on the more substantive aspects of contract law at the expense of its procedural aspects. This omission on the part of these scholars has its counterpart in the failure of more traditional commentators to examine the policy consequences of the technical rules governing contract formation with anywhere near the thoroughness with which they have explored the incentive properties of, for example, remedial doctrines.

I argue, in contrast, that the consequences of even the most formalistic rules of contract formation and interpretation can be analyzed fruitfully by viewing bargaining as a noncooperative game, in which parties attempt to maximize their returns from negotiation given the relevant institutional constraints and the likely behavior of the other participants. Such an analysis requires substantial judgment and common sense for its successful execution, because of the wide variety of factors that determine the strategic structure of the bargaining. Once the techniques and styles of thought necessary for the effort are learned, however, they can be used to analyze both straightforward doctrines, which may superficially appear to serve primarily conventional functions, as well as more complicated rules that are agreed to have important consequences for efficiency and fairness of bargaining — even if it is unclear from an initial perspective just what those consequences might be.

The specific models of contract bargaining presented here are in-

tended more to illustrate the potential of the game-theoretic approach than to establish any strong conclusions regarding the economic efficiency of the particular doctrines considered there. Nonetheless, the particular models do yield specific conclusions, if we are reasonably restrained in our ambitions.

Using the model of Part V, which considered the consequences of treating silence in the face of an offer as an acceptance, we might construct plausible arguments either for or against the hypothesis that the prevailing doctrinal rules embodied in the *Second Restatement* are justified on grounds of efficiency. When bargaining takes the form of a single take-it-or-leave-it offer, as it sometimes does in practice, treating silence as acceptance increases the efficiency of negotiation when the cost of a response is small. Arguably, this corresponds to distinctions made in black-letter law. On the other hand, the efficiency criterion might justify extending the scope for silent acceptance substantially beyond the limits allowed by current doctrine. If this is the case, the traditional rules might be better explained by a judicial concern for the distributional aspects of exchange, as well as a distaste for the potential opportunism inherent under alternative regimes.

The relative simplicity of the take-it-or-leave-it model was arguably a virtue when the model was applied to the situation of a silent acceptance. The resulting insights seemed roughly to correspond to the kinds of justifications, however cursory and conclusory, that traditionally have been offered for prevailing doctrines, even if the conventional wisdom was not borne out in all respects. The model of Part VI, in contrast, which analyzed the duty to read in the form-contract context, suggests that when information is imperfect, heuristic or intuitive modes of thought can yield results more misleading than helpful. Formal analysis may be required to identify the sensitivity of the model to variations in its assumptions.

For example, I argued that under a strict duty to read, notwithstanding some superficially plausible arguments to the contrary, recipients of form contracts would generally lack incentive to acquaint themselves with the latent terms contained within, and that as a result those terms would be chosen suboptimally. It follows from such an analysis that the efficiency of bargaining might be enhanced by legal rules that limit the power of drafting parties to vary contract terms without explicitly notifying the recipient. This line of argument was made possible only by precisely specifying the strategic sequence of the bargaining. Accordingly, an important lesson of the analysis is that the predictions of any theoretical account of bargaining cannot be reli-

ably trusted until the robustness of the theory to changes in its specifications has been studied.

With regard to the particular doctrines I have considered, my conclusions must be viewed as incomplete at best. Still, a number of broadly general observations are possible. To begin with, the legal rules of contract formation and interpretation have substantive consequences; they can and probably do affect parties' incentives and hence the efficiency and outcome of actual negotiation. Furthermore, the rules' substantive effects go beyond the mere provision of convention and coordination. As the models of both Parts V and VI demonstrated, different rules can lead to different bargains being struck. On the other hand, apparently antagonistic rules, such as those imposing a duty to read form contracts versus a duty to disclose their contents, can have similar allocative effects depending on other aspects of the strategic structure. The similarity, however, need not grow out of a Coasian model of bargaining or out of any assumption of zero transaction costs.

The research program I propose is just getting started. Its implications are not yet at the stage that can be practically applied, except at the most general level. Judges and legislators can, however, at least learn to be cautious about basing their decisions about contract formation and interpretation on facile predictions about the likely course of negotiation, and scholars can be more careful about encouraging them to do so. Private individuals with better knowledge of their particular strategic positions may be able to go further than this, and use the insights of bargaining theory to help design the frameworks in which they choose to contract.

I have argued that traditional explanations of offer and acceptance doctrine, and of contract formation doctrine generally, fail to identify important incentive effects. The methods and styles of thought of non-cooperative game theory, on the other hand, highlight such effects; they help to illuminate the policy consequences of the law of bargaining by drawing our attention to its strategic structure. The potential insights to be gained transcend the narrow concerns of contract lawyers and scholars. Since Coase's classic article and probably before, we have known that the opportunity for private individuals to enter into contracts can critically influence the efficiency and fairness of substantive rules and regulations in every field of the law. By devoting more attention to the specific branch of law that governs the procedures of private ordering, we may learn how better to use the law in general to promote the public interest.