THE ECONOMICS OF RELATIONSHIPS AND

THE LIMITS OF THE LAW

James W. Bowers[*] and John P. Bigelow[†]

LSU LAW & ECONOMICS WORKING GROUP
DISCUSSION PAPER SERIES

DRAFT
December 15, 1995
revised August 14, 1996

Please address correspondence to:

James W. Bowers
Louisiana State University Law Center
Baton Rouge, Louisiana 70803-1000

phone: (504) 388-8709
fax: (504) 388-5937
LMBOWE@LSUVM.Sncc.Lsu.Edu

---

[*]Louisiana State University Law Center

[†]Department of Economics, Louisiana State University.

Participants at a workshop at the University of the Saarlands, particularly Dieter Schmidtchen, Roland Shroeder and Eric Neumayer provided very valuable commentary on the earliest draft of this paper. Vielen danken. We also benefitted from comments by participants at the Ninth Annual Maastricht Workshop on Law & Economics, and from a workshop presentation at the University D'Avergne in Clermont-Ferrand France. As is both customary and in this case just, we claim exclusive responsibility for any demerits remaining.

THE ECONOMICS OF RELATIONSHIPS AND THE LIMITS OF THE LAW

ABSTRACT

In this study we model "close-knit" human relations in order to explain the empirical findings of social scientists that law does not affect behaviors occurring within such relationships. We show that parties face significant strategic obstacles in forming relationships, and suggest how they can overcome those obstacles. Once an efficient relationship forms, however, our model confronts the standard finding that relational equilibria are too numerous to permit the drawing of very precise conclusions about behaviors that can be expected to occur within close relationships. To meet that difficulty, we propose that a large class of strategic relational equilibria which we denote as "unilaterally inefficient" are implausible and suggest that parties can be expected to follow relational strategies which do not produce them. Those strategies we define as "value-oriented."

By restricting our attention to equilibria produced by relational interactions using value oriented strategies, we show that in on-going relationships, exogenous legal entitlements will never be resorted to unless the relationship is no longer efficient, in which case exogenous law ought to terminate it. We discuss several legal fields in which legal relationships might likely resemble the economic relationships we model, and show that the structure of traditional legal doctrine is consistent with the predictions generated by our model. The law does not attempt to intervene in ongoing relationships except to terminate them. Our analysis also shows, however, that the absence of legal entitlements is roughly coextensive with environments in which self-help is most likely to be an effective substitute for overcoming whatever collective action problem legal doctrine might have otherwise been called upon to address.

THE ECONOMICS OF RELATIONSHIPS AND THE LIMITS OF THE LAW

I. INTRODUCTION

Scholars working at the intersection of law and Social Science have discovered the human relationship. Economists, who regard equilibria as self-sustaining, have easily concluded that equilibrium conditions in relationships will be self-enforcing and thus create "rights"[1] among the relating parties which exist independently of any exogenous *legal* entitlements.[2] Repeated exchange relationships are also known to generate a plethora of different potential equilibria, however.[3] Thus it has been difficult to say much about the precise content of the self-enforced rights themselves. In this study, we refine the customary Nash equilibrium concept to eliminate a substantial number of those confusion-generating relational equilibria. These refinements permit us to confirm and explain the widely held intuition that law does not influence the behavior of parties to ongoing relationships.

Scholars in the anthropological or sociological tradition,[4] and some law professors[5] have opined that

---

[1] "Rights" to a lawyer suggests entitlements enforceable by the imposition of duties on someone else by some outside law enforcement authority. Wesley Hohfeld, Some Fundamental Legal Conceptions as Applied in Judicial Reasoning, 23 Yale L. J. 16 (1923). Economists use the word "rights" to refer to what lawyers would be inclined to label "reliable expectations" because economists are interested in behavior, and real people are likely to respond to other peoples' behaviors whether or not the behaviors are compelled by the legal system. Thus if, in equilibrium, "obligors" behave as if they were bound to, "obligees" will behave as if they had "rights." Cf. Yoram Barzel, Economic Analysis of Property Rights (1989); Douglas W. Allen, "What are Transaction Costs," 14 Res. L. & Econ. 1 (1991).

[2] The classics are: Lester Telser, A Theory of Self-Enforcing Agreements, 53 J. Business 27 (1981); and Benjamin Klein & K.B. Leffler, The Role of Market Forces in Assuring Contractual Performance, 89 J. Pol. Econ. 615 (1981). For recent examples of this line in the literature, which cite some of its intellectual history, see, e.g. Toshihiro Matsumura & Marc Ryser, Revelation of Private Information About Unpaid Notes in the Trade Credit Bill System in Japan, 24 J. Legal Stud. 165 (1995); Stephen Pirrong, The Efficient Scope of Private Transactions-Cost-Reducing Institutions: The Successes and Failures of Commodity Exchanges, 24 J. Legal Stud. 229 (1995); Hans-Jorg Schmit-Trenz & Dieter Schmidtchen, Private International Trade in the Shadow of the Territoriality of Law: Why Does It Work?, 58 Southern Econ. J. 329 (1991). See also, Oliver Williamson, The Economic Institutions of Capitalism, Ch. 7-8 (1985) for an assessment of this literature. A well known recent empirical work which documents the techniques of self-enforcement is Robert Ellickson, Order Without Law (1991).

[3] See, e.g., D. Baird, R. Gertner, and R. Picker, Game Theory and the Law, 172-74 (1994); D. Fundenberg & J. Tirole, Game Theory, Ch. 5 (1991).

[4] D. Black, The Behavior of Law 41 (1976); R. Ellickson supra note 2, Stewart Macauley, Non-Contractual Relations in Business: A preliminary Study, 28 Am. Soc. Rev. 55 (1963). But see Barbara Yngvesson, Re-examining Continuing Relations and the Law, 1985 Wisc. L. Rev. 623 (1985) (arguing that law can be "constitutive" of relationships. Yngvesson does not specify, behaviorally just what she regards as a "relationship" nor does she identify any particular behavioral effects which law might have in the context of an ongoing one.)

[5] See, e.g., Eric Posner, The regulation of Groups: The Influence of Legal & Nonlegal Sanctions on Collective Action, 63 U. Chi. L.R. 133 (1996) (Arguing that nonlegal sanctions are well known to make legal sanctions often superfluous within close-knit groups); Cf. Melvin A. Eisenberg, Relational Contracts, in J. Beatson & D. Friedmann (eds.), Good Faith and Fault in Contract Law (1995),

the economists' self-enforcement hypotheses may not go far enough. They argue that the law is not only unnecessary to the relating parties but also, that were any law adopted intended to endow relating parties with entitlements beyond those they can self-enforce, that such exogenous law would be ineffectual. Empirical studies support this "Unenforceability Hypothesis" (the "UH") that law is effective only as between relative strangers. It does not influence behavior among persons in "close-knit" relationships.[6] The UH is an empirical induction only, and has been modelled only informally.[7] The lack of a rigorous explanation for the law's inability to influence relating parties weakens the UH insight. Without understanding why and how legal doctrine fails to influence relational behavior we can't be sure of the boundaries within which the hypothesis operates. In this study, we develop a theoretical explanation for the empirical UH findings, which we propose may explain several legal doctrines, and offer solutions to other puzzles as well.

American relational contract scholarship, for example, is critical of contract law because it appears more suited to "one-shot" discrete transactions than to continuing relationships.[8] Relational contract scholars, however, also seem to endorse the UH. They speculate that the "transactional" assumptions underlying contract law endow it with only marginal efficacy and meaning in the lives of those who do business and typically engage in contracting behavior.[9] Their critique of contract law thus assumes that it is the inadequate *substance* of the contract law which explains its inability to affect relating parties. Our results suggest that the law would likely be inoperative as between relating parties no matter what the substance of the doctrine but that it would influence discrete transactors. Our theory thus tends to explain the transactional focus of the

---

291-304 (arguing that the law should not attempt to regulate ongoing close relationships but instead simply provide fair terms to be imposed when they are terminated.)

[6]Ibid., note 4 supra.

[7]See. e.g. Ellickson, supra. note 2; Macauley, supra note 4; Cf. Peter M. Blau, "Social Exchange," 7 Encycl. of Social Sci. 452 (1968).

[8]See, e.g. I. Macneil, The New Social Contract (1980); William C. Whitford, Ian Macneil's Contribution to Contracts Scholarship, 1985 Wisc. L. Rev. 545 (1985); Peter Linzer, Uncontracts, Context, and the Relational Approach, 1988 Ann. Survey of Am. L. 139 (1989).

[9]Robert W. Gordon, Macauley, Macneil, and the Discovery of Solidarity and Power in Contract Law, 1985 Wisc. L. Rev. 565, 571 (1985).

underpinnings of contract law.[10]

Our argument can be briefly illustrated by reference to Gary Becker's proof that exogenous forces cannot alter the relative wealths of members of patriarchal families.[11] While Becker did not pursue the argument, his analysis suggests that the law of civil remedies (which transfers wealth from wrongdoers to victims, thus altering their relative wealths), might be unable to discipline one member of a family for wrongs committed to another. Indeed the law is shaped as if it lacked such capability. Traditional legal doctrine refuses to decide disputes between family members although the law is willing to terminate the relationship.[12] Becker's argument assumes that a family's affairs are controlled by an altruistic patriarch whose redistributions of the family's income to its members would tend to nullify the effects of any transfers mandated by the exogenous law of remedies. This study arrives at similar conclusions without resorting to altruism.

In part II, we explain the need for carefully specifying just what is meant by a close human relationship. Much misunderstanding can be created when "relations" or "close-knittedness" or the "norms" which they are said to create, are treated as black boxes without such specificity. Part III uses a game theoretic analysis to show that relating parties can maximize the returns from their opportunities to capture rents beyond what markets offer without resorting to exogenous legal entitlements. Part IV examines the effects which exogenous legal entitlements might have in an ongoing close relationship, and shows that the equilibria provided by resort to such entitlements will be deemed inferior by the parties to the results obtainable without resorting to the law. Moreover, appeal by any party to a legal remedy proves that the relationship has lost its

---

[10]Cf. Eisenberg, supra note 5, however, arguing that since all contracting behavior is relational, the substance of contract law ought to be altered to reflect that fact, except for certain face-to-face contractual relations such as marriage, in which the law ought to leave the behaviors of relating parties alone except to provide "fair" terms upon which the relationship can be terminated.

[11]Gary Becker, A Theory of Social Interactions, 82 J. Pol. Econ. 1063 (1974).

[12]This rule is best known in husband/wife relationships, see infra, text accompanying notes 43 and 44. Since the law will not ordinarily entertain litigation brought by minors, it cannot typically provide dispute settlement as between parents and children either. H. Clark, Jr. & G. Glowinsky, Domestic Relations Cases & Materials 659 (1990). Nevertheless, there is a modern trend under which juvenile courts can aggressively intervene in the parent child relationship, usually under the rubric of providing therapeutic services to a dysfunctional family. The ultimate remedy, however, when intervention is unsuccessful, is likely to be removal of the child from an abusive or neglectful home, and thus an effective end to the relationship. See, e.g. La. Ch. C., Titles 7, 10 (1991, eff. 1992). Inasmuch as the parent/child relationship is not so easily characterized as a continuing course of exchange of services, which is our beginning premise, our conclusions here may not be applicable to the parent/child situation and thus not contradicted by this modern trend.

capacity to generate rents for the parties. Thus the only contribution to the welfare of relating parties which the law is capable of making is not to attempt to regulate, but instead is only to terminate the relationship relegating the parties back to the market. Part V elaborates on the legal doctrines governing close relationships to show that the law itself seems structured as if it is powerless to intervene in them.

II. THE DEFINITION OF A RELATIONSHIP

Not unexpectedly, imprecision in understanding relations starts with vagueness in our language. The word "relation," surely one of the most vague in the English vocabulary, is defined as follows:

> The feature or attribute of things which is involved in considering them in comparison or contrast with each other; the particular way in which one thing is thought of in connection with another; any connection, correspondence or association which can be conceived as naturally existing between things.[13]

One can always linguistically describe a relationship between *any* two persons. If A is in Kansas, and B is in Katmandu, they are related by being located on an arc on the globe, or by being several time zones apart. And, as long as they stay put, we can even say that the relationship we described is a continuing one. Abstractly then, the concept of the human relationship, in which "no man is an island," is synonymous with "the human condition." The UH does not purport to apply so generally. We cannot say, about these persons in Kansas and Katmandu, that law will be ineffective as between them. Indeed, a relationship composed only of these connections is one between strangers. The social scientist's understanding of a human relationship, accordingly, is much narrower than the poet's or the lexicographer's. Imprecision in the terms we employ will weaken any theories of "relationships" since, linguistically, everyone is always in a "relationship" with everyone else. Relational theories have no coherent boundaries and thus are likely to be imperialistic, and ultimately uninformative. Under a nonrestricted definition, the "discrete transactors" are in a "relationship" too, and so contract law which assumes that all contracts are discrete is entitled to be called "relational" as well.

Our study is behavioral, so we start by identifying behavioral determinants of relationships. We deem

[13]Oxford English Dictionary, Vol. II @ 398 (Compact Ed. 1971).

parties to be in a close, or "economic" relationship, only when they interact in specific ways-to wit: *they are engaged in the frequent exchange of services with each other*. In a friendship, Harry reserves the Tee-time, and Wanda brings beer and golf balls, or, in a domestic household, he bakes the biscuits and darns the socks, while she chops the firewood and shovels the driveway. Indeed the importance of human relationships, inferable from their longevity and ubiquity, is that relating parties can supply services at low cost to themselves but which are more highly valued by their partners than by other service demanders in the market. Relationships, in a word, must be understood ab initio, as efficient institutions. They thus exist where gains from trade are obtainable, and are an efficient means of exploiting the opportunities to capture those gains.

Relationships are more than trades alone, however. They are made of *iterated* interaction. Indeed, one famous finding of game theory is that repeated interactions solve many problems of information asymmetry and moral hazard which might inhibit cooperation between sporadically trading parties.[14] Repeatedly interacting parties obtain information about each other's capabilities and desires, so models which assume that interactors become adequately informed about each other, are not unrealistic.[15] The relationships we model here assume that the parties exchange services repeatedly with each other to the extent that they are extremely well informed about each other's capabilities and desires.

Our final assumption is that relating parties cannot economically specify ex ante, their planned responses to a wide range of future contingencies.[16] While there are many types of transaction costs which prohibit the parties from making fully specified contracts ex ante[17] all we need to assume is that planning

---

[14]See, e.g. R. Axlerod, The Evolution of Cooperation (1984).

[15]Readers to whom this assumption seems too strong might ponder whether at times they, as children, for example, ever harbored a suspicion that their mothers were omniscient. The parent in a repeated set of interactions with a child is able to infer much about the child's state of mind, and even of his or her recent behavior, from subtle cues in the child's present manner. You might be surprised to find, now that you are grown, if you were merely to ask, that your mother knew a lot about some of your youthful stunts and transgressions which, at the time, you thought, or rather, desperately hoped were secret from her.

[16]In this respect we follow Charles Goetz & Robert Scott, Principles of Relational Contracts, 67 Va.L.Rev. 1089 (1981). In much of the literature which addresses the issue of "relational" contracts, this assumption is merely implicit. There is a tendency, for example, in the community of legal scholars, to assume that any contract in which the performances will be exchanged over a long period is "relational." See e.g. Alan Schwartz, Relational Contracts in the Courts: An Analysis of Incomplete Agreements and Judicial Strategies, 21 J. Legal Stud. 271-318 (1992).

[17]see e.g. Schwartz, id note 16, arguing that when future contingencies or responses are not observable, or even if they are, are unverifiable, they become noncontractible.

resources are scarce. Parties will, accordingly, avoid the costs of making hundreds of useless plans for future conditions which will never materialize in order to have the one useful plan on hand which made the appropriate assumptions about all the future fortuities. Instead, in order to avoid the cost of ex ante planning, parties will agree to jointly adapt ex post to whatever contingencies actually do materialize.[18] If the costs of ex ante specification are great enough, they could render the entire relationship economically non-viable *if the parties have to rely on an explicit advance plan or contract* to conduct the relationship. Even if the costs are not that great the parties will want, if possible, to avoid them. Note also that when the relationship initially forms, the parties may have little, or poor quality information about each other's circumstances and desires. By the time future adaptations are required, on the other hand, the parties' experiences with each other are more likely to have solved the problems caused by lack of information. Parties acting in the future have better information not only about exogenous contingencies, but also about endogenous circumstances as well. The future may in fact be the more efficient time during which to make decisions about the appropriate adaptations to future circumstances.

Summarizing, then, we define a relationship as:

a. A course of exchanges of services between two self-interested individuals;

b. which gives rise to gains from trade;

c. in which the exchanges are repeated and conducted with sufficient frequency that the parties become very well informed about each other's abilities and desires.

d. but the quantity, variety, and timing of which it would be costly to enumerate and agree to in advance.

III. Relational Behavior in the Absence of Governing Law

[18]Note that this set of assumptions about relationships is more compelling in the case of a so-called "multiplex" relationship in which each party furnishes a large *variety* of services to the other as opposed to a so-called "simplex" relationship in which party One furnishes only service One to party Two, who furnishes only service Two in return. In multiplex relationships, the number of possible future contingencies must be raised to a power equal to the number of different kinds of services for future planning to be comprehensive. The difference is not, however, theoretically significant as long as both services One and Two are furnished over a period of time in discrete batches. Each batch can be modelled as if it were another variety of service simply because it is furnished at a different point of time and thus, in a different environment. In other words, our claim is that all enduring human relationships, defined as a series of exchanges, can fairly be regarded as multiplex in analytical effect.

The Economics of Relationships

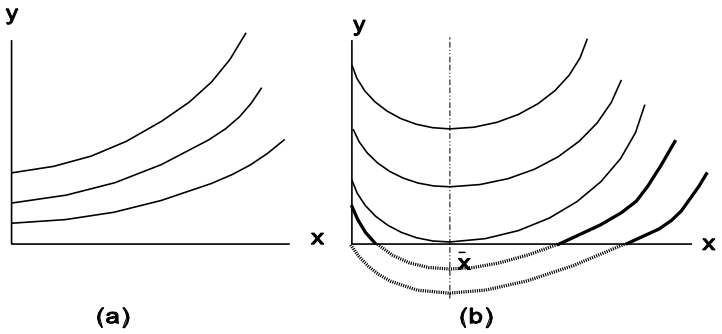
In this section we describe a theory of how relationships are conducted in the absence of law which specifically attempts to govern conduct within them.

A. THE SETTING

There are two parties, Harry (*H*) and Wanda (*W*). Harry could provide several (*n*) services to Wanda.[19] Let x_1, be the amount of the first such service, x_2 be the amount of the second, and so on. The amount of the last service is x_n and $x = (x_1, x_2, \cdots, x_n)$ is the whole bundle of services Harry provides Wanda. Harry must choose *x* from a set of feasible services bundles, *X*. Likewise, Wanda could provide several (*m*) services to Harry. Denote them by y_1, y_2, and so forth. The whole bundle of services Wanda provides is $y = (y_1, y_2, \cdots, y_m)$ chosen from a set of feasible service bundles, *Y*.

We assume Wanda benefits from the services Harry provides and denote those benefits by $b^W(x)$. Similarly $b^H(y)$ measures the benefits Harry obtains from Wanda's services. We also assume the marginal benefit of each service x_i (y_j) is positive but diminishing. The cost to Harry of providing *x* is $c^H(x)$, and the cost to Wanda of providing *y* is $c^W(y)$. The marginal cost of each individual service may or may not be positive,[20] but is always increasing. The net value to Harry of interacting with Wanda is $u^H(x, y) = b^H(y) - c^H(x)$, and the net value to Wanda of interacting with Harry is $u^W(x, y) = b^W(x) - c^W(y)$.

Let $\bar{x}$ be the *x*-bundle which minimizes $c^H(x)$ and let $\bar{y}$ be the *y*-bundle which minimizes $c^W(y)$. If Harry and



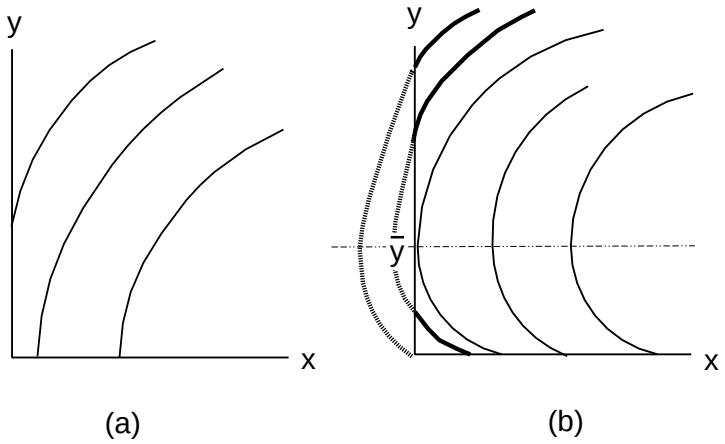
Harry's Indifference Curves

[19]We also implicitly assume that the value of these services to Wanda is likely to exceed their value to other persons in the market desiring Harry's services. Thus, relational services, we surmise, are often likely to be specialized to the particular consumer of them, or that the provider has specialized in the ability to provide them, or both. Thus, relational services are likely to be sources of considerable quasi-rents to both the producer and consumer of them.

[20] The marginal cost of a service will be negative whenever the activity of providing the service would be engaged in (partially), by the actor who deems some level of that activity beneficial for its own sake. The assumption of increasing marginal cost means, in this context, that the marginal gain from providing the service diminishes.

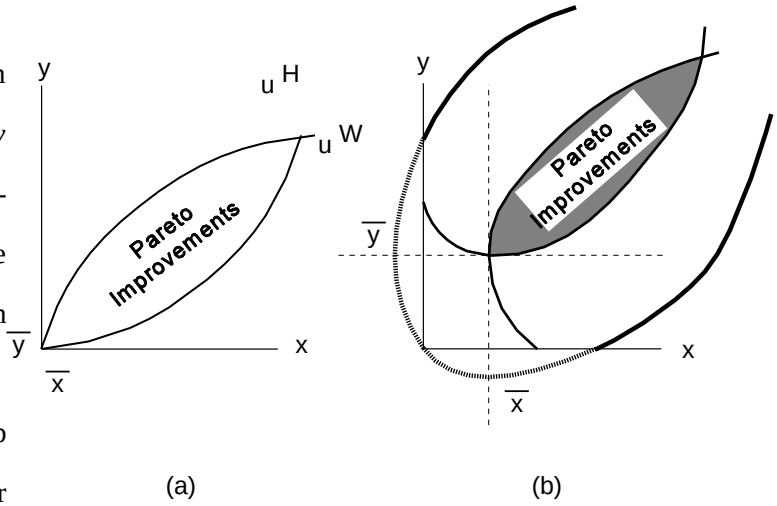
Wanda provide only one

service to each other, then the indifference curves in Figure 1(a) and Figure 1(b) show their preferences. Figure 1(a) shows Harry's indifference curves if the marginal cost of x is always positive. His indifference curves slope upward because y is desirable and x is costly. Figure 1(b) shows his indifference curves when the marginal cost of x is initially negative. If the marginal cost of x is always positive [as in Figure 1(a)], then $\bar{x} = 0$, but if the marginal cost of x is initially negative [as in Figure 1(b)], then $\bar{x} > 0$. For any $x < \bar{x}$, an increase in x makes Harry better off. It is only when $x > \bar{x}$, that increases in x make Harry worse off. In either event, increases in y always make Harry better off. Thus, to the left of $\bar{x}$ Harry's indifference curves are downward sloping and to the right of $\bar{x}$ Harry's indifference curves are upward sloping. Figure 2 shows Wanda's indifference curves. Figure 2(a) shows them when the marginal cost of y is always positive, while Figure 2(b) shows them when the marginal cost of y is initially negative.



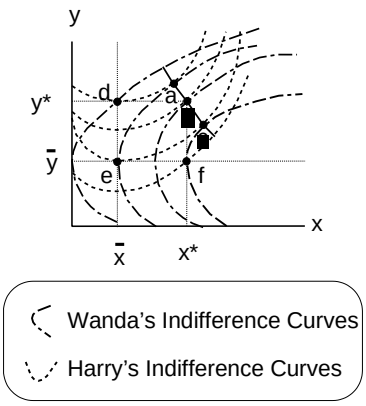
Wanda's Indifference Curves

Harry and Wanda can gain from trade with one another if the amount of y Harry requires as compensation for producing one unit of x is smaller than the amount of y Wanda is willing to give up in exchange for one unit of x. These are Harry and Wanda's marginal rates of sub stitution, and they are the slopes of their respective indifference curves. Figure 3



Gains from Trade

illustrates two possibilities. 3(a) illustrates gains from trade when the marginal costs of both *x* and *y* are positive. If Harry and Wanda don't interact, they will produce at the origin which, recall, is located at the point of both parties' optimal market alternative. Pareto improvements may be obtained at any allocation in the region between the two indifference curves. 3(b) shows possible gains from trade when the marginal costs of *x* and *y* are initially negative. If Harry and Wanda have no interaction with one another they will be left with their next best alternative, the market (the origin.) Every allocation in the region between the outer pair of indifference curves represents a Pareto improvement over that allocation. However, even in the absence of concern for one another they will be unlikely to produce at the origin. If marginal costs of x < 0 and mc of y < 0, each party can gain in expanding the activity level to the point where the marginal cost is equal to 0, i.e. ($\bar{x}$ for Harry, $\bar{y}$ for Wanda). Once they've reached this point, they have exhausted the gains that are possible from unilateral action.[21] To obtain the further gains represented by the points in the shaded region between the two inner indifference curves will require bilateral cooperation.[22] Pareto-Efficient outcomes are illustrated by the points on locus *abc* in Figure 4 where the two parties' indifference curves are tangent to one another.



Pareto-Efficient Outcomes

[21]We include the negative marginal cost service in our model because of our intuition that such services may be critical in explaining the commencement of relationships. See our discussion at page 14.

[22]If Harry's indifference curve is steeper than Wanda's at the origin, then no gains to trade are possible. This is illustrated in Figure 22-A. We will assume throughout that gains from trade are possible.

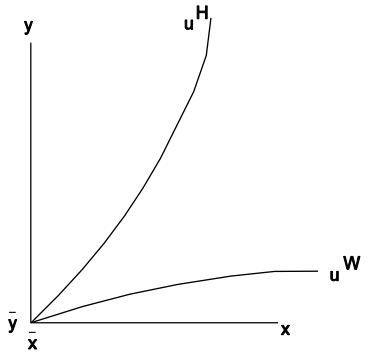


Figure 22-E
No Gains to Trade

B. THE PRISONERS' DILEMMA

If Harry and Wanda interact only once, their interaction may be modelled as a game in which their strategy sets are X and Y and their payoff functions are u^H and u^W respectively. No matter what y Wanda chooses, Harry's payoff, $b^H(y) - c^H(x)$, is maximized by choosing $\overline{x}$, and, likewise, no matter what x Harry chooses, Wanda's payoff, $b^W(x) - c^W(y)$, is maximized by choosing $\overline{y}$. Therefore, this "one-shot" game has a dominant strategy equilibrium in which Harry plays $\overline{x}$ and Wanda plays $\overline{y}$.

This dominant strategy equilibrium is the result of the familiar Prisoners' Dilemma game, and explains, for example, why everyone you meet does not become your dear friend. To demonstrate the generality of this result, suppose Harry and Wanda try to achieve point b in Figure 4. At b Harry must provide x^* and Wanda must provide y^*. Thus, x^* and y^* are their "cooperative" strategies. Now if Harry expects Wanda to provide y^*, he would rather provide only $\overline{x}$, which would move the outcome to point d in Figure 4. Harry prefers d to b. We may think of $\overline{x}$ as Harry's "fink" strategy. Similarly, if Wanda expects Harry to provide x^*, she will prefer to provide only $\overline{y}$, achieving point f. We may think of $\overline{y}$ as Wanda's "fink" strategy. If Harry expects Wanda to fink (i.e. provide $\overline{y}$), he would still rather provide $\overline{x}$ than x^*, since he prefers point e to point f. Similarly, if Wanda expects Harry to fink ($\overline{x}$), she would rather provide $\overline{y}$ because she prefers point e to point d. Thus, if x^* and $\overline{x}$ were Harry's only choices and y^* and $\overline{y}$ were Wanda's only choices, the game they play could be represented by the 2×2 matrix shown in Table A, which is the conventional form of a Prisoners' Dilemma game with a dominant strategy equilibrium of fink/fink, an inefficient result.

Table A
A Prisoners' Dilemma Game

Wanda's Payoff Harry's Payoff	Wanda Cooperates y^*	Wanda Finks $\overline{y}$
Harry Cooperates x^*	$u^W(x^*, y^*)$ $u^H(x^*, y^*)$	$u^W(x^*, \overline{y})$ $u^H(x^*, \overline{y})$
Harry Finks $\overline{x}$	$u^W(\overline{x}, y^*)$ $u^H(\overline{x}, y^*)$	$u^W(\overline{x}, \overline{y})$ $u^H(\overline{x}, \overline{y})$

$$u^H(\overline{x}, y^*) > u^H(x^*, y^*) > u^H(\overline{x}, \overline{y}) > u^H(x^*, \overline{y})$$

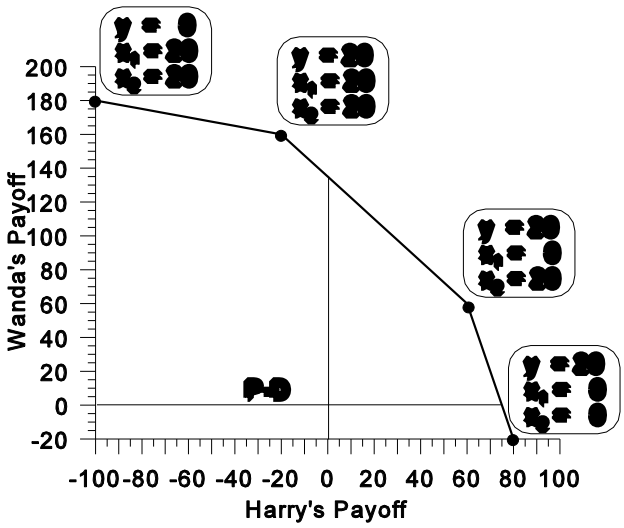
$$u^W(x^*, \overline{y}) > u^W(x^*, y^*) > u^W(\overline{x}, \overline{y}) > u^W(\overline{x}, y^*)$$

Since, from this point on, we begin exploring the operation of relationships in part by means of an illustration, we now introduce our specific example game, and apply the lesson of the prisoners' dilemma to it. Consider a simple example of a relationship in which there is one service, *y* (spading the garden), which Wanda can provide Harry and two services, x_1 (housework, cleaning and tidying up etc.) and x_2 (expending effort to be cute-to-have-around-the house), which Harry can provide Wanda. Assume the marginal benefit to Wanda of each unit of x_1 (cleaning) is 5, the marginal benefit to Wanda of each unit of x_2 (cuteness) is 4, and the marginal benefit of each unit of *y* (spading) to Harry is also 4. Assume the marginal cost to Wanda of each unit of *y* (spading) is 1 up to a maximum of 20 units. Assume the marginal cost to Harry of each unit of x_1 (cleaning) is 4 up to a maximum of 20 units and the marginal cost to Harry of each unit of x_2 (cuteness) is 1 up to a maximum of 20.[23] The marginal benefits and costs for services in the relevant quantity ranges, are summarized in Table B.

Table B

Wanda	*y*	x_1	x_2
MB		5	4
MC	1		
Harry	***y***	x_1	x_2
MB	4		
MC		4	1

Since Harry has two means of providing benefits to Wanda, he must not only decide what level of benefits to provide, but how to provide them, i.e what combination of cuteness and cleaning, x_1 and x_2, to use. Because the marginal cost to Harry of providing $1 of benefit to Wanda with x_1 (cleaning) is 4/5 = .8 and the marginal cost of providing $1 of benefit to Wanda with x_2 (being cute) is 1/4 = .25, Harry will minimize the cost of providing benefits to Wanda by using x_2 whenever possible. Since Wanda has only one means of providing benefits to Harry, her deci-



E
Payoff Possibility Frontier

[23] The assumption that at most 20 units of each service may be produced is consistent with our assumption of increasing marginal costs. One way of interpreting the limitation on the amount of a service that may be produced is to regard the marginal cost beyond that point as infinite.

sion is simpler. She simply decides what level of benefits to provide to Harry.

Figure 5 illustrates the payoffs which can be achieved from this relationship. Any pair of payoffs on or below the payoff possibility frontier is achievable. The point labelled *PD* in Figure 5 represents the payoffs at the dominant strategy equilibrium of the Prisoners' Dilemma game. Neither party will perform any services to the other in the dominant strategy equilibrium, and thus each will be left with his or her next best opportunity, the market.

C. THE INITIATION OF REPEATED EXCHANGES:

To Law & Economics Scholars, the inevitability of prisoner's dilemmas arising to block potentially efficient exchanges explains the need for and consequently the adoption of contract law. When the law enforces contracts, it permits the participants in a potential prisoners' dilemma the option of escaping the dominant strategy equilibrium of noncooperation, which prevents the achievement of efficient exchanges, by permitting the parties to effectively precommit to future cooperative behavior. Mutual precommitments can produce the efficient cooperate/cooperate equilibrium. The existence of contract law, then tends to foster efficient cooperative behavior. Unfortunately, however, under our assumptions contracting is not a solution to the prisoners' dilemma for potential parties to relationships.

i) THE ECONOMIC STRUCTURE OF LEGAL RULES

Precommitments are not effective if the behaviors being committed to are impossibly expensive to define and specify in advance. They work when the parties can specify ex ante, what behaviors will be efficient ex post, in which case those behaviors can be promised, and the breach of such promises can be subjected to legal redress. In some environments, however, what will turn out to be ex post efficient is largely a function of exogenous circumstances, and, as we have pointed out, the development and disclosure of appropriate levels of endogenous information.[24] As an example, we may promise our wives to do the dishes on Monday nights. Whether those promises are ex post efficient, however, is a question of what other opportunities we might have on future Monday nights which must be forgone in order to do the dishes. An efficient promise, then, is likely to be highly hemmed in by conditions. We will do the dishes, but not if the

[24] See our discussion at page 7 supra.

trout are biting, or Monday night baseball is on, or if it is, it's only the Cubs playing the Padres, but not the Braves playing the Rockies, etc. etc. A promise hemmed in by the multiple conditions needed to assure that its performance is ex post efficient, however, is not worth much as a precommittment. The thousand loopholes make the promise so unreliable that the promisee is unlikely to bind herself to a risky, cooperative equilibrium in reliance upon it. Thus, trade-offs are inevitable. The value of a contractual promise as a precommittment device must be given up in order to increase the probability that its enforcement will be ex post efficient.

The same analysis is applicable to any legal doctrine. The reliably applicable, unconditional rule which prescribes any future behavior is likely to be overly broad, and thus will mandate much ex post inefficient conduct. On the other hand, a rule whose future applications are carefully circumscribed to a limited number of future contingencies, is not likely to induce much ex ante beneficial reliance either. If the value of rules is that they permit individuals to rely on specified future rights in order to know best how to deploy their present assets efficiently, then, this value must be achieved at the cost of much inappropriate ex post application. These costs are illustrated in Figure 12 infra. Under our assumptions, parties form relationships precisely because they fear ex post inefficiencies, and are trying to avoid them by retaining high levels of ex ante discretion about future behaviors. Legal doctrine, then, is unlikely to be of much assistance to such parties in overcoming the prisoners' dilemma.

ii) THE ROLE OF NEGATIVE MARGINAL COST SERVICES

How then, can relationships form in the teeth of the prisoners' dilemma equilibrium which seems to prevent them from ever getting underway?

It is a standard result of game theory that the existence of private (asymmetric) information is likely to lead to suboptimal outcomes.[25] If the information that I am willing to enter into a jointly welfare maximizing bargain with you is not available to you, we may never bargain with each other, and even if we do, we may fail to make the appropriate deal. At the same time, however, we have shown that the parties' private incentives are not to interact cooperatively, and given that they will have very little information about each other before they have engaged in much interaction, our argument leads to the ironic conclusions that

[25] See, e.g. Ian Ayres & Robert Gertner, Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules, 99 Yale L.J. 87-130 (1989)(arguing that, as a consequence, doctrines ought to be designed to induce the disclosure of private information).

relationships are unlikely ever to commence.[26] Nevertheless, lack of information may even be critical to formation of relationships.

Our preliminary speculation, which relies a good deal on casual empiricism, is that relationships are apt to commence in an environment in which marginal costs for some valuable services are negative. The idea that marginal costs of an activity can be negative exploits the categorical ambiguity inherent in the economic categories of costs and benefits. We suppose merely that individual actors sometimes act because they perceive that the activity itself is rewarding. The idea of negative marginal costs becomes particularly relevant for our analysis, however, when we suppose in addition that when actors undertake activity for its own sake, that same activity can be perceived as providing services to another party.

Wanda might be observed by Harry puttering in the garden but he may not know that for her, gardening is a form of play. Harry might also spend effort grooming himself to look good, for the sheer private joy of doing so, although Wanda may think he is making himself cute in order to please her. The recipient of sexual services may experience a gain from activity that his or her partner would have engaged in for the strictly private benefits it generated. In ignorance of the shapes of the cost curves of those who are conferring external benefits upon them, however, individuals may surmise that the provision of services is actually an offer to engage in a series of exchanges.

It is precisely the lack of complete information about whether complete free-riding is possible that might induce the parties who are external beneficiaries of each other's activities to begin engaging in exchanges of services which mark the commencement of a relationship. It is plausible to assume, for example, that some levels of work or play activity, or intimate interaction would be engaged in for their own sake. That human relationships tend to evolve into friendships in which mutual play occurs, marriages and families in which intimate services are exchanged, and in partnerships as a result of preferred work activity exchanges, is not surprising. Indeed these are the sorts of relationships which are ubiquitously actually observed.

---

[26]We are not the only analysts to have recognized this dilemma. Subsequent to the time we formulated our analysis we discovered a working paper, Ronald Heiner and Dieter Schmidtchen, Rational Cooperation in One-Shot, Simultaneous PD Situations, University of the Saarlands, Center for Law & Economics Working Paper No. 9503 (1995), and a newly published article, Rachel Kranton, The Formation of Cooperative Relationships, 12 J. Law, Econ. and Organization 214 (1996) which address the same problem, of explaining how relationships can ever form.

D. THE ROLE OF REPEATED EXCHANGE

However the process of relating commences, the economic role of the relationship, then, is to provide a means of avoiding the Prisoners' Dilemma, i.e., of avoiding the dominant strategy equilibrium $(\overline{x}, \overline{y})$. Relationships can succeed in doing so because in them, exchange activity is repeated. Repeated interaction leads to self-enforcing equilibria that create economic property rights. Outcomes which could not be achieved by rational agents in one-shot play become self enforcing with repeated play because each agent knows he or she can punish or reward the other's current behavior in future periods. Before the fact, an agent who knows that such punishments and rewards are in the offing will feel different incentives from those felt by the same agent in one-shot play.

Assume, then, that the basic game from section B, called the "stage game," is to be repeated indefinitely often. In each repetition the game is the same. Harry chooses x from X and Wanda chooses y from Y. Harry's momentary payoff is $u^H(x, y)$ and Wanda's is $u^W(x, y)$. Harry and Wanda both discount future payoffs by a factor of δ, where $0 < \delta < 1$.[27] In each round of play after the first assume both parties remember all prior play. Each player then, knows that his or her own future choices can be made after information about the strategies of his or her partner has been revealed by prior play. In an equilibrium[28] players choose strategies which maximize the sum of their discounted payoffs, given the strategy of the other player. By choosing strategies which "punish non-cooperative behavior" the two parties can give one another incentives to sustain outcomes which could not be achieved in one-shot play. One player "punishes" another by withholding rent-producing service-providing activity, reducing the punished player's payoffs. The more you can lower the other's payoff, the more severely you punish. Thus, relational partners whose services supply high levels of rents are not only efficient providers of service, but also efficient discipliners of their partners.[29]

---

[27] δ is the discount factor. One unit of payoff n periods in the future is worth δ^n units of payoff right away. Alternatively, we could attribute a discount rate, $\rho > 0$ to the agents. In that case $\delta = \frac{1}{1+\rho}$.

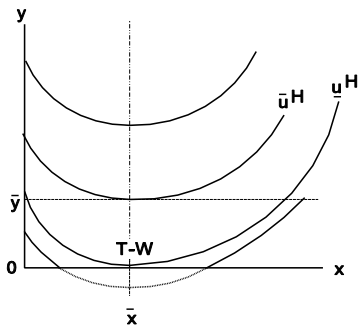
[28] A Nash equilibrium.

[29] One of our commenting friends pointed out that while we assume legal enforcement is a costly form of providing relational discipline, that we had one-sidedly assumed that self-enforcement was costless. Our point is actually even stronger than that. The withholder of services actually *gains* by withholding services which it would otherwise be costly to provide. Self-enforcement thus, is better than costless. It entails *negative* costs. (It may also, of course, entail loss of services from the partner as well.)

Partners with excellent alternative market opportunities, likewise, receive only small extra-market rents and are thus difficult for their partners to motivate.

Suppose, for example, Wanda decided to influence Harry by making his one-period payoff as low as possible. Harry will likely choose x in response so as to make his payoff as large as possible. Harry's mini-max payoff is the payoff he achieves when Wanda (correctly anticipating Harry's reaction) chooses y so as to minimize Harry's payoff and Harry responds by choosing x (given y) to maximize his payoff. The mini-max payoff is the most severe punishment Wanda can be certain of inflicting on Harry.

Because the marginal benefits of Wanda's services are positive, Harry always benefits when y is increased and is always made worse off when y is reduced. Thus, the harshest punishment Wanda can inflict on Harry is to reduce y to zero.[30] From his own point of view, the best response (in one period) Harry could make to this decision would be to provide $\bar{x}$. Thus, Harry's mini-max payoff is

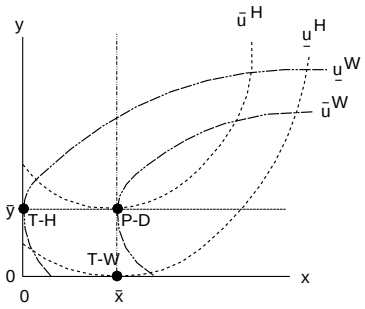


F

$$\underline{u}^H = u^H(\bar{x}, 0) = b^H(0) - c^H(\bar{x}).$$

If each party provides only one service to the other, Harry's mini-max payoff is illustrated by Figure 6. The worst thing Wanda can do to Harry is to provide $y = 0$. If she does, Harry's best response is $x = \bar{x}$. The outcome of the game is, then, the point labelled *T-W*. For Harry this lies on the indifference curve labelled $\underline{u}^H$. Given that Harry is always free to choose x, the worst threat Wanda can make is point *T-W*.

Harry and Wanda's mini-max payoffs are shown together in Figure 7. Just as *T-W* is the worst threat Wanda can make against Harry, *T-H* is the worst threat Harry can make against Wanda. At point *T-H* Wanda's payoff is



G

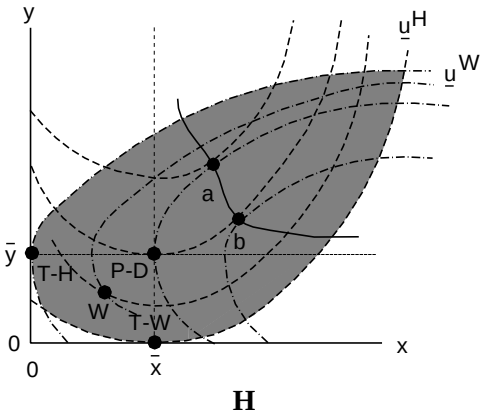
$$\underline{u}^W = u^W(0, \bar{y}) = b^W(0) - c^W(\bar{y}),$$

[30] Recall, in general y is a *bundle* of services, so reducing y to zero means providing zero amount of *every* service.

which is Wanda's mini-max payoff.[31]

According to the widely known "Folk Theorem"[32] any feasible outcome which gives each player a payoff strictly greater than the mini-max can be achieved as an equilibrium of the repeated game if the discount factor, δ, is close enough to 1, (i.e. if the players can be motivated by the gain or loss of future prospects.) Because a player can unilaterally ensure him(her)self at least his(her) minimax payoff, outcomes which give more to each agent are called *individually rational*. The folk theorem thus states that repeated play of any individually rational outcome is an equilibrium to the repeated game if the discount factor is close enough to 1.

In its simplest version the Folk Theorem is proved by assuming each agent follows a "grim" strategy in which he or she cooperates (i.e. takes actions consistent with the designated outcome) in the initial period and again in each subsequent period so long as the other player has also cooperated. As soon as the other player fails to cooperate, the first player reverts to his or her harshest punishment, thus reducing the defector to no more than the mini-max payoff. The punishment is continued indefinitely.



H

Possible Repeated Game Equilibria

If the discount factor is close enough to 1, then the 1-period gain from defecting will be less than the loss from indefinite punishment in the future, so no player will defect. In a relationship in which each party produces only one service, any of the outcomes in the shaded region in Figure 8 can be an equilibrium. That includes the Pareto Efficient locus (a,b), the dominant noncooperative strategy equilibrium (allocation *P-D)*, and even

[31]Note, however, that the mini-max outcomes are not necessarily equilibria. In fact, in Figure 7 each player has his or her own minimax outcome, and there is no level of exchanged services which represents a minimax equilibrium.

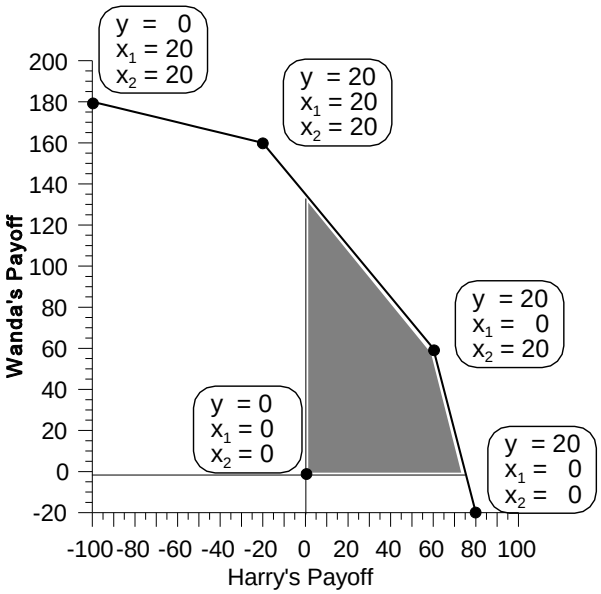
[32] There is an extensive literature on the folk theorem, which has also been called the "General Feasibility Theorem" in Myerson, Roger B. (1991), *Game Theory Analysis of Conflict*, Harvard University Press, Cambridge MA. One of the earliest papers is Aumann, Robert J. (1981), Survey of Repeated Games, in Robert J. Aumann *et al*, *Essays in Game Theory and Mathematical Economics in Honor of Oskar Morgenstern*, Bibliographisches Institut, Mannheim. At the time Aumann wrote this paper the result had been widely known for some time but had not been published - hence the term "folk theorem." A more recent survey may be found in Sorin, Sylvain. (1992), Repeated Games with Complete Information, Chapter 4 in *Handbook of Game Theory*, Volume 1, Robert J. Aumann and Sergiu Hart eds., North-Holland, Amsterdam, 71 - 107. A synthesis of several differing versions of the folk theorem is found in Benoît, Jean-Pierre and Vijay Krishna(1996), The Folk Theorems for Repeated Games: A Synthesis, Working Paper, <http://econwpa.wustl.edu/eprints/game/papers/9601/9601001>.

allocations which are pareto dominated by *P-D*, like *W*. All these allocations may be sustained in repeated play equilibrium because they are better than *T-H* and *T-W* for Wanda and Harry respectively. A player will be willing to cooperate on achieving any one of these outcomes if the alternative is, as it is in the grim strategy, that the other player will revert to *T-H* (resp *T-W*).

Our first result is a direct consequence of the Folk Theorem:

Proposition 1: *Each efficient outcome which provides both parties with a payoff better than their mini-max payoff can be achieved through repeated interaction, even in the absence of any law regulating relational behavior, if the discount factor,* δ*, is close enough to one.*

Returning to the story of Harry, the cute cleaner-upper, Proposition 1 and the folk theorem may be illustrated by Figure 9. The payoff pairs in the shaded region are individually rational. By the folk-theorem, repeated play of any of them is a Nash equilibrium of the repeated game. This includes, of course, the points on the frontier of this set, which is the set of payoffs that are both efficient and individually rational. If either party has negative marginal costs then the folk theorem even allows outcomes which are Pareto *inferior* to the Prisoners' Dilemma equilibrium to be achieved in repeated play, as in point W in Figure 8.



I
Payoff Possibility Frontier

E. INEFFICIENT OUTCOMES IN REPEATED GAMES

Among the inefficient outcomes which the folk theorem renders as potential equilibria there are two types of inefficiency. These may be illustrated by our Cute Harry example. Compare Outcome *A*, in which $y = x_2 = 20$ and $x_1 = 0$, (Cute but messy, garden fully spaded) with Outcome *B*, in which $y = x_2 = 10$ and $x_1 = 0$ (messy, but not so cute, half-spaded garden). Outcome *A* Pareto dominates outcome *B* because there are potential gains to trade which are not fully exploited at *B* as they are at *A*. In order to move from *B* to *A* both parties must increase the amount of service they provide. Starting from *B* neither party acting alone can effect a Pareto improvement. Thus, we say outcome *B* is bilaterally inefficient because it is inefficient and it requires the action of both parties to achieve a Pareto improvement.

Outcome *A*: $y = 20,\ x_1 = 0,\ x_2 = 20$

$u^W = 4\times20 - 1\times20 = 60$

$u^H = 4\times20 - 1\times20 = 60$

Outcome *B*: $y = 10,\ x_1 = 0,\ x_2 = 10$

$u^W = 4\times10 - 1\times10 = 30$

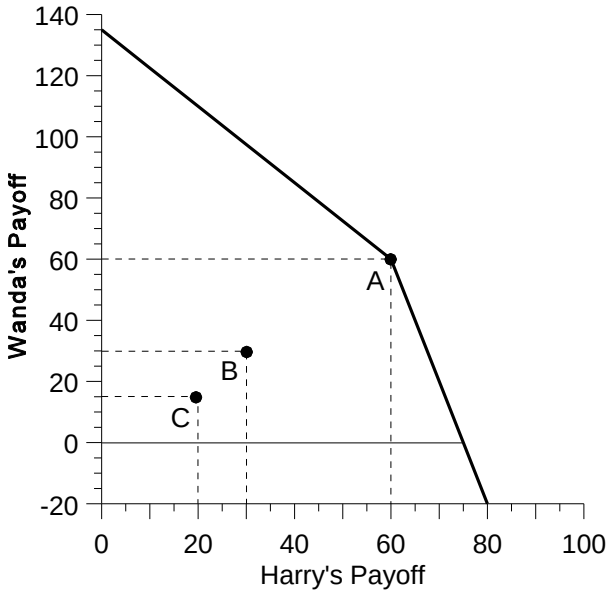
$u^H = 4\times10 - 1\times10 = 30$

Outcome *C*: $y = 10,\ x_1 = 5,\ x_2 = 0$

$u^W = 5\times 5 - 1\times10 = 15$

$u^H = 4\times10 - 4\times 5 = 20$

Contrast this with the movement from outcome *C* (tidy but ugly, garden half-spaded) to outcome *B* (cuter but messier, and half-spaded). Outcome *B* Pareto dominates outcome *C*, because Harry has chosen an unnecessarily expensive means of providing Wanda with benefits. If Harry were to replace the heavy housework ($x_1 = 5$) with a significant amount of cosmetic effort ($x_2 = 10$) which costs him less to deliver a unit of equivalent benefit to Wanda, both parties could be made better off. Since this Pareto improvement may be obtained by the action of only one player, we say outcome *C* is *unilaterally inefficient.* The payoffs which the parties can achieve from these three outcomes are illustrated in Figure 10, which shows a portion of the payoff possibility frontier from Figure 5.



J

Unilateral and Bilateral Inefficiency

Since *C* (too tidy but too ugly) is individually rational, repeated play of it can be a Nash equilibrium.

This equilibrium is maintained by Wanda's use of the grim strategy which promises to punish Harry by reverting to $y = 0$ if he should deviate from $x_1 = 5$, $x_2 = 0$. Wanda is *not* being irrational in pursuing the grim strategy, for in a Nash equilibrium Wanda must evaluate her strategy taking Harry's strategy as given. If Harry follows the grim strategy which supports *C* then it is fully rational for Wanda to do so also. Nor can the equilibrium be dismissed as relying on non-credible threats. An alternative version of the folk-theorem[33] provides that repeated play of any individually rational outcome is a sub-game perfect equilibrium of the repeated game. The requirement of sub-game perfection ensures that any threats embodied in a player's strategy are credible in the sense that it is in the player's interests to carry out those threats when the strategy calls for the player to do so. Obtaining the folk theorem with sub-game perfection requires the use of more complicated strategies than the simple grim strategy, but the outcome is the same. Thus, even with the restriction that Wanda's threats must be credible, repeated play of the unilaterally inefficient too-tidy-but-too-ugly outcome "C" ($y = 10$, $x_1 = 5$, $x_2 = 0$) is an equilibrium.

F. VALUE ORIENTED EQUILIBRIA

While it does not rely on non-credible threats, C (too-tidy-but-too ugly) or any unilaterally inefficient outcome seems highly implausible as an equilibrium. Harry could increase his payoff by switching to B (cuter but messier), and since he would also increase Wanda's payoff in the process she *ought* to have no reason to want to discourage him from doing so. If Wanda's strategic response to Harry were based on the *value* of the payoff she derives from Harry's actions rather than on the nature of the actions themselves, and she followed the rule that Harry will not be punished (by lowering his payoff) when he does something that benefits her (by increasing her payoff), then Harry would have an incentive to switch from too-tidy-but-too-ugly to messier-but-cuter. He would increase his own payoff in the process. Since he would not reduce Wanda's, Wanda would not punish him by reducing her spading in subsequent periods. We say that a strategy which depends on the *value* of the payoff one player receives from another is *value sufficient*, and a value sufficient strategy which never reduces the other player's payoff when the strategy's player's payoff is increased is called *value*

[33] Theorem 1 in Fudenberg, Drew and Eric Maskin (1986), The Folk Theorem in Repeated Games with Discounting or with Incomplete Information, *Econometrica* **54**(3), 533 - 554.

monotonic. Value sufficient and value monotonic strategies collectively are called *value oriented.* We say that an equilibrium is value monotonic if it is a regular Nash equilibrium and if both players' strategies are value monotonic.

It can be shown that the use of value monotonic strategies excludes from the set of equilibria precisely those outcomes which are implausible because they are unilaterally inefficient.[34] Specifically, if the discount rate is close enough to one, then repeated play of any outcome which can not be unilaterally Pareto-dominated is a value monotonic equilibrium of the repeated game,[35] and, no outcome which could be unilaterally Pareto dominated is ever part of a value monotonic equilibrium.[36]

Restricting analysis to plausible, (i.e. value monotonic - those which cannot be unilaterally Pareto dominated) equilibria only, considerably simplifies the stage game (and, hence the repeated game). Suppose Harry decides to furnish Wanda with a bundle of services, x, which provides her with services $B^W = b^w(x)$. As long as Wanda is playing a value monotonic strategy, Harry will maximize his own payoff by choosing a bundle of services $x^*(B^W)$ which solves the cost minimization problem

$$\underset{x}{\text{Minimize}}\ c^H(x) \qquad \text{subject to} \quad b^W(x) \geq B^W \quad \text{and} \quad x \in X.$$

Likewise, as long as Harry plays a value monotonic strategy, Wanda is free to choose $y^*(B^H)$ so as to solve

$$\underset{y}{\text{Minimize}}\ c^W(y) \qquad \text{subject to} \quad b^H(y) \geq B^H \quad \text{and} \quad y \in Y.$$

We may now think of Harry and Wanda as playing a much simpler game in which Harry's strategy is to choose B^W, Wanda's benefits, and Wanda's strategy is to choose B^H, Harry's benefits. In this simpler game Harry's payoff is

$$B^H - C^{*H}(B^W)$$

and Wanda's is

---

[34] See John P. Bigelow (1996), Value Oriented Equilibria in Repeated Games of Complete Information, mimeo, Department of Economics, Louisiana State University, Baton Rouge, LA in which value oriented equilibria are developed more fully.

[35] *ibid*, Theorem 3, p 10

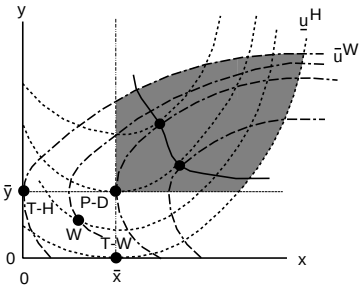
[36] *ibid*, Theorem 4, p 12

$$B^W \quad - \quad C^{*W}(B^H),$$

where $C^{*H}(B^W)$ is the cost, $c^H(\, x^*(B^W)\,)$, to Harry of providing the bundle, $x^*(B^W)$, which provides benefits B^W to Wanda at the lowest possible cost and $C^{*W}(B^H)$ is the cost, $c^W(\, y^*(B^H)\,)$, to Wanda of providing the bundle, $y^*(B^H)$, which provides benefits B^H to Harry at the lowest possible cost.

Thus, Wanda provides Harry the cute housecleaner with \$4 of benefits for every 1 unit of (spading) y, which costs her \$1. Therefore, up to a maximum of \$80 the cost to Wanda of providing benefits to Harry is $C^W(B^H) = B^H/4$. If $B^W \leq 80$, then Harry's cheapest means of producing B^W is to use cuteness (x_2), each unit of which costs him \$1 and provides Wanda with \$4 worth of benefits, so the cost to him is $C^H(B^W) = B^W/4$. For $B^W > 80$, Harry will provide as much as possible using $x_2 = 20$, at a cost of \$20. The remainder, $B^W - 80$, will be produced with housecleaning (x_1), each unit of which provides \$5 of benefits to Wanda and costs Harry \$4. Therefore, for $B^W > 80$, $C^H(B^W) = (4/5)(B^W - 80) + 20$.

While the restriction to value monotonic equilibria rules out some outcomes, it still leaves (in most cases) a considerable multiplicity of equilibria. In Figure 11 all of the outcomes in the shaded region are both individually rational and can not be unilaterally Pareto dominated, thus repeated play of any one of them is a value monotonic equilibrium. As we shall see in the next section, however, the additional precision provided by the use of value monotonic equilibria enables us to reach conclusions regarding the role exogenous legal entitlements can play in relationships.



K
Value Monotonic Equilibria

IV. THE CONDUCT OF A RELATIONSHIP UNDER LAW

In this section we consider how Harry and Wanda would be affected by a "Law of Relationships." In other words, how would the conduct of the relationship be affected if there were a body of law which sought to govern the conduct of the parties toward each other in a relationship?

A. COSTS AND BENEFITS UNDER LAW

A body of relationship law would grant to an entitled party certain legal rights against the duty-owing party thus restricting the duty-owing party's range of choice. For example, the law may give Harry the right

to insist that Wanda do certain positive things and that she must refrain from doing certain other things. In terms of the logic of our model, legal entitlements can be recast as externally enforced restrictions on the bundles y or x. Thus, we model a law of relationships by assuming there is a sub-set $\hat{X}$ of Harry's feasible set X and a sub-set $\hat{Y}$ of Wanda's feasible set, Y. The two subsets consist of only those bundles y or x which satisfy the legal restrictions. If the conduct of the relationship is governed by law then Harry must choose x from $\hat{X}$ and Wanda must choose y from $\hat{Y}$.

We assume that the law is not so restrictive that it prevents one party from providing a certain level of benefits to the other party. That is to say, if there is some x in X which provides Wanda with benefits of $B^W = b^W(x)$, then we assume it will still be possible, after the law is imposed, for Harry to provide that level of benefits to Wanda. That is, if x itself is not in $\hat{X}$ then there must be some other x' in $\hat{X}$ which will provide the same level of benefits, i.e. $b^W(x') = b^W(x)$. The effect of the law, then lies in its effect on costs. If Harry's choice has been restricted to $\hat{X}$, the resulting lack of flexibility can not lower his costs. It must either leave them unchanged or increase them. Thus, when the law restricts Harry's choices he must choose $\hat{x}^*(B^W)$ to solve

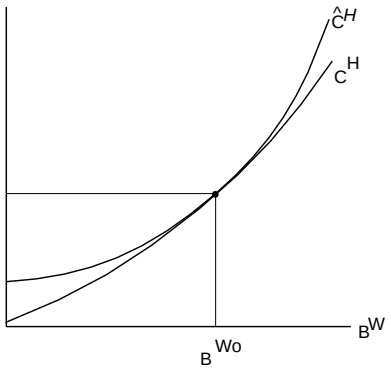
$$\underset{x}{\text{Minimize}}\ c^H(x) \qquad \text{subject to} \quad b^W(x) \geq B^W \quad \text{and} \quad x \in \hat{X}.$$

His costs will be $\hat{C}^{*H}(B^W) = c^H(\hat{x}^*(B^W)) \geq C^{*H}(B^W)$. The difference between $\hat{C}^{*H}(B^W)$ and $C^{*H}(B^W)$ represents the added cost to Harry of providing benefits of B^W to Wanda when he is not free to choose the least expensive means of doing so. Likewise, when the law restricts Wanda's choices she must choose $\hat{y}^*(B^H)$ to solve

$$\underset{y}{\text{Minimize}}\ c^W(y) \qquad \text{subject to} \quad b^H(y) \geq B^H \quad \text{and} \quad y \in \hat{Y}.$$

and her costs will be $\hat{C}^{*W}(B^H) = c^W(\hat{y}^*(B^H)) \geq C^{*W}(B^H)$.

The exact relationship between the cost functions with and without these restrictions will depend on the nature of the restrictions. For example, one natural form for such restrictions to take would be for Wanda to be entitled to a specific level of some service, say $\bar{x}_k^H$. This level of service k may be optimal for some level of benefit B^{Wo}, but if, as seems natural, the cost minimizing level of service k is increasing in total benefits,



L

The Cost of Legal Rules

then $\bar{x}_k^H$ will be too large when $B^W < B^{Wo}$, increasing costs because too much x_k must be used in place of lower cost alternatives and insufficient when $B^W > B^{Wo}$, increasing costs again because alternative higher cost substitutes must be employed instead of the lower cost x_k. In either cases costs with the restriction, $\bar{C}^H(B^W)$, will be greater than costs without the restriction, $C^H(B^W)$. This is illustrated in Figure 12 which shows C^H and $\bar{C}^H$. In more extreme cases it is possible that the restrictions embodied in $\bar{X}^H$ will not be efficient for any level of benefits, in which case the new cost curve would lie entirely above the original. On the other hand, if the restrictions embodied in Wanda's entitlements merely enforce Harry's use of the least cost method of producing B^W, then $C^H(B^W) = \bar{C}^H(B^W)$. If there were additional transactions costs incurred when one's relational partner invoked their legal rights, then $\bar{C}^H$ would lie entirely above C^H.[37]

When the law grants one party certain rights *vis a vis* the other, the party with those rights has the option not to insist upon them. Thus, for Harry's rights to be binding on Wanda, Harry must seek to enforce them, and similarly for Wanda's rights to be binding on Harry, Wanda must seek to enforce them. Therefore, we introduce new strategic variables. Let z^H be 0 when Harry does not invoke his legal rights and 1 when he does. Similarly, represent Wanda's litigation decision by z^W which is 0 when Wanda does not invoke her legal rights and is 1 when she does. The game Harry and Wanda are now playing calls for Harry to choose the pair (B^W, z^H) and for Wanda to choose the pair (B^H, z^W). Harry's payoff is

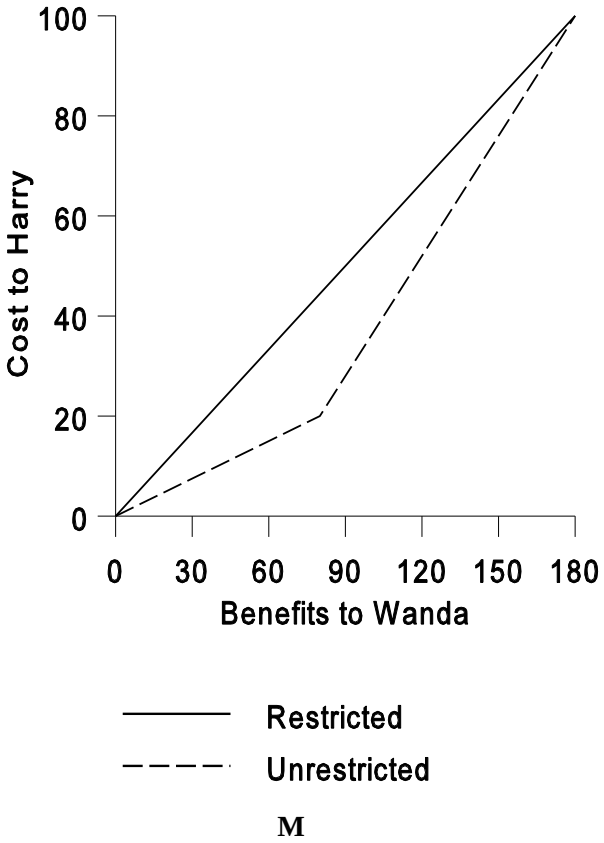
$$B^H - z^W \hat{C}^H(B^W) - (1 - z^W) C^H(B^W)$$

and Wanda's payoff is

$$B^W - z^H \hat{C}^W(B^H) - (1 - z^H) C^W(B^H).$$

[37]We neglect such transactions costs and consider here only the cost of lost opportunities when we reason that resort to the law is costly. We employ the extremely conservative, but unrealistic assumption that obtaining legal entitlements is otherwise costless. If, in fact, attorneys must be hired and compensated, and court systems created and paid for at some positive cost in order to assure the delivery of legal entitlements, our conclusions are just that much stronger.

To illustrate, suppose the law were to attempt to intervene in the conduct of the Wanda and Harry, the cuter cleaner-upper relationship. Although it is inefficient for Harry to use x_1 (housework) until x_2 (cuteness) has been increased to its capacity, it is nevertheless true that Wanda would prefer one unit of x_1, which provides her a benefit of 5, to one unit of x_2, which provides her a benefit of 4. Therefore, suppose Wanda and others like her are able to impose a rule of law which requires partners like Harry to provide some minimal amounts of x_1. For example, suppose Wanda, if she invokes her rights under this law, is able to force Harry to balance his use of x_1 and x_2, i.e. the law requires Harry to set $x_1 = x_2$.



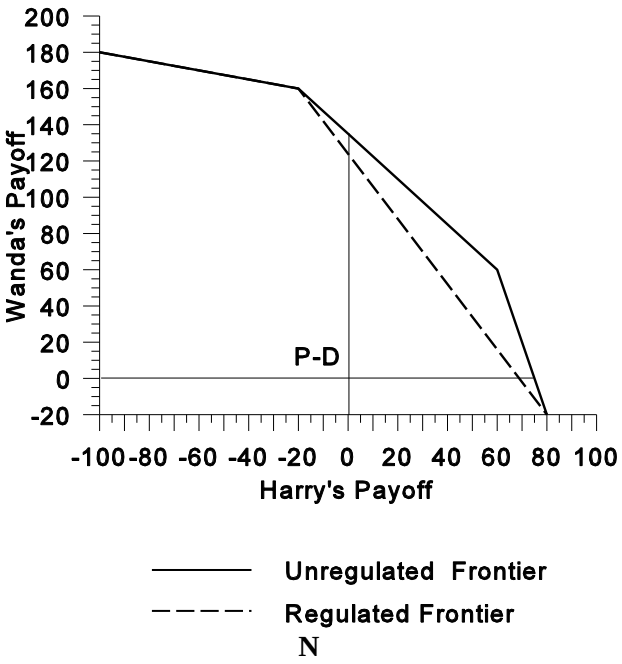
Harry's Costs with and without Litigation

When Wanda enforces this right Harry will provide \$9 of benefits to Wanda for each unit of $x_1 = x_2$. Each unit of $x_1 = x_2$ will cost him \$5, so Harry's new cost function will be $C^H(B^W) = 5 \times B^W/9$. The effect of this rule on Harry's costs is illustrated in Figure 13, which shows both his cost function in the absence of law and in its presence.

Because this rule is inefficient, the Payoff Possibility Frontier will shift inward, as illustrated in Figure 14. The inner frontier shows which payoffs can be achieved when Wanda enforces her legal rights against Harry.

B. EQUILIBRIA UNDER LAW

Resort to exogenous legal entitlements thus, necessarily forfeits relating parties' opportunities to achieve the most efficient outcomes, restricting the possible equilibria in the relationship to those within the innermost utility possibility frontier. The modified stage game created by the introduction of legal remedies makes it feasible for Harry and Wanda to receive any payoffs that were feasible without law in the original game. In order to do so, all they need to do is choose $z^H = z^W = 0$. *Ceterus paribus*, when legal remedies are invoked, costs increase for both parties. Thus, the only way in which legal remedies could improve the allocation would be through their strategic effect on the resulting equilibrium. The question before us becomes, "Can the introduction of legal remedies as a strategic option bring about a change in the equilibrium which achieves a Pareto superior set of decisions about how much of each service to provide?" In this section we show that the answer is, "No."



The Rule of Law

We have already seen in Proposition 1 that repeated play of any efficient outcome is an equilibrium without legal entitlements. Since the added strategic option provided by legal remedies will leave each player's minimax payoffs either unchanged or reduced, the set of individually rational outcomes is either unchanged or bigger. Now the folk-theorem applies to our new game just as it applied to the game without law, so, these efficient outcomes are still obtainable as repeated game equilibria in which neither party ever avails themselves of their legal rights.

Indeed, since use of the law is Pareto inefficient any equilibrium in which the law is used must be

Pareto dominated by an allocation in which law is *not* used. If the original equilibrium (in which the law was used) was individually rational, then the Pareto superior allocation (in which the law is not used) must also be individually rational. But if it is individually rational, then, by the Folk-theorem it too could be achieved as an equilibrium. Hence we have,

Proposition 2: *Any repeated play equilibrium in which either party invokes legal remedies can be Pareto dominated by another repeated play equilibrium in which they don't if the discount factor, δ, is close enough to one.*

Since legal remedies add so little to the efficiency of the resulting equilibrium allocation, it is reasonable to ask why parties would ever use them. It is our contention that as long as the relationship is capable of producing rents in excess of the parties' outside (market) opportunities that they will have no incentive to do so. For that conclusion we rely on the value monotonic equilibrium concept. Consider a proposed value monotonic equilibrium in which one party, say Harry, invokes his legal rights, i.e. $z^H = 1$ in some period. Further suppose that Harry's invocation of these rights is non-trivial in the sense that $C^W(B^H) < \hat{C}^W(B^H)$ in at least one period when $z^H = 1$.[38] Wanda's payoff in the period in which Harry invokes his rights is

$$B^W - \hat{C}^W(B^H)$$

which is less than

$$B^W - C^W(B^H),$$

which is Wanda's payoff when $z^H = 0$. Since shifting from $z^H = 1$ to $z^H = 0$ has increased Wanda's payoff by

$$\Delta^W \equiv \hat{C}^W(B^H) - C^W(B^H)$$

Harry can reduce the benefits he provides to Wanda by that amount and leave her no worse off than she was before. Since the equilibrium is value monotonic, Wanda will not respond by making Harry worse off in any

[38] If $C^W(B^H) = \hat{C}^W(B^H)$, then it does not matter to either party whether Harry sets $z^H = 1$ or 0. In that case, for any equilibrium in which Harry does not invoke his rights there is an otherwise identical equilibrium in which he does and *vice versa*.

subsequent period. So, when Harry reduces the benefits he provides Wanda from B^W to $B^W - \Delta^W$ and his costs fall by

$$C^H(B^W) - C^H(B^W - \Delta^W),$$

he is made better off in the period in which he changed z^H and is no worse in any subsequent period. Thus, the original decision to invoke his rights was not optimal, and we have proven:

Proposition 3: *In a value monotonic equilibrium neither party ever invokes their legal remedies unless doing so has no effect on the other party.*

To illustrate Proposition 3 consider the outcome of the litigation game in which Wanda the Gardener exercises her rights against Harry the Cute House-Cleaner. Suppose Wanda chooses ($B^H = 80$, $z^W = 1$ in order to compel Harry to furnish $x_1 = x_2$) and Harry chooses $B^W = 90$. This will provide Wanda with a payoff of

$$B^W - \frac{B^H}{4} = 90 - \frac{80}{4} = 70.$$

Harry's legally compelled payoff would be

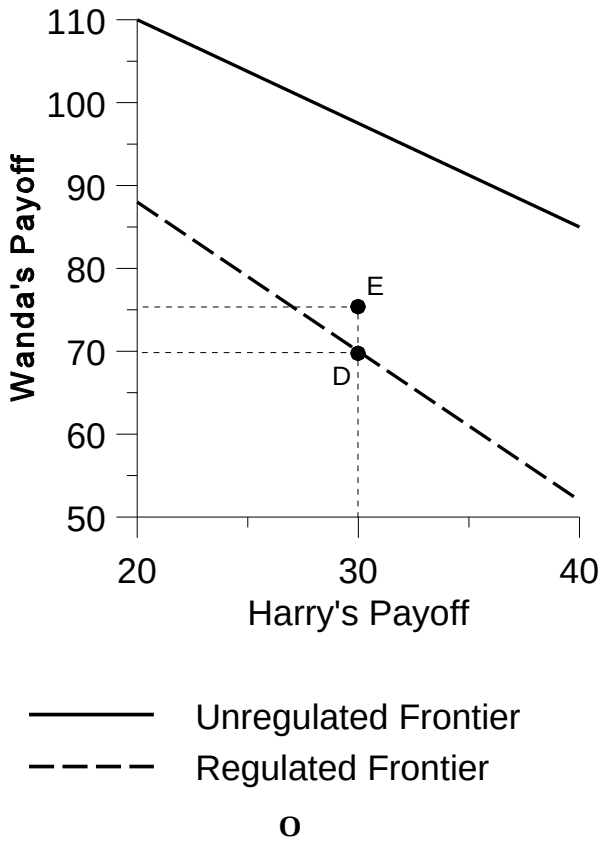
$$B^H - \frac{5B^W}{9} = 80 - \frac{5\times 90}{9} = 30.$$

This payoff pair lies on the inner payoff possibility frontier, as illustrated by point D in Figure 15. This outcome is inefficient because by setting $z^W = 1$ Wanda forces Harry to use a needlessly expensive means of producing her 90 units of benefits. To see how Wanda can unilaterally bring about a Pareto improvement, suppose she changes her strategic choice to $z^W = 0$. This will lower the cost to Harry of producing $B^W = 90$ from $(5\times 90)/5 = 50$ to $(4/5)\times(90 - 80) + 20 = 28$, a savings of 22. That means Wanda can reduce B^H from 80 to 58 and leave Harry's net payoff unchanged at 30. However, the result of reducing B^H will be an increase in her own payoff, which will now be

$$B^W - \frac{B^H}{4} = 90 - \frac{58}{4} = 75\frac{1}{2}.$$

Wanda's changing from ($B^H = 80$, $z^W = 1$) to ($B^H = 58$, $z^W = 0$) while Harry retains $B^H = 90$ moves the realized payoffs from point *D* in Figure 15 to point *E*. Thus, by dropping her litigation and making an appropriate change in B^H Wanda achieves a unilateral Pareto improvement.

This example serves to illustrate the significance of making the using B^H, B^W, z^H, and z^W as strategic variables in games which have resort to the law as an available strategy. The payoffs at point *D* are achieved with $y = 20$ and $x_1 = x_2 = 10$. Those at point *E* are achieved with $y = 14½$, $x_1 = 2$, $x_2 = 20$. Thus, in terms of *y*s and *x*s the move from *D* to *E* is not obviously unilateral. It is clearly seen as unilateral, however, once we model the strategic variables as B^H, B^W, z^H, and z^W.



Litigation is Unilaterally Inefficient

Thus value orientation plays two roles in our result that rational parties will not resort to the law in a viable relationship. First, it motivated the shift in strategic focus from *x* and *y* to B^H, B^W, z^H, and z^W, a shift which makes resort to exogenous legal entitlements unilaterally inefficient. Second, it implies that in equilibrium a rational agent will not use a unilaterally inefficient strategy.

C. Extrapolating on Our Conclusions

i) The Limited Role Law might play in Relationships:

As we have just demonstrated law cannot provide rational relating parties with effective exogenous entitlements which they might ever choose to use while a profitable relationship is ongoing. It is easy both to underestimate and to overestimate the significance of this result so a word is in order here about how it should be interpreted.

a. The Termination of Relationships: Our result applies only within the context of ongoing relationships. The law routinely does play a role when the parties end the process of exchanging services, and terminate the relationship. Indeed, one implication of our analysis is that litigation is necessarily likely to mark the end of a relationship (as we have precisely defined the term) whether or not that was the intent of a litigating party. Jailing the violent husband on the legal complaint of his abused wife, is, in our analysis, bringing an effective economic end to the relationship inasmuch as the exchange of services is less likely to continue and to be successful with one of the parties locked up. The law can thus provide the service of protection to the wife, but, it cannot also assure her of the stream of other services she may desire, and even feel entitled to, from the relationship.

b. Rights to Property owned by relating parties: In other cases, the intervention of the law is recognizably fulfilling the function of terminating the relationship. One of the principal functions both of matrimonial and partnership law, for example, is to define the post-relational property entitlements of the formerly relating parties to property acquired during the relationship and therefore jointly owned by them (as well as to decide questions of post-relational responsibility as between the parties for the fulfillment of jointly owed obligations). During the partnership's or marriage's economic existence (i.e. as long as rent producing exchanges continue to frequently occur), the property "rights" of the relating parties will exist only to the extent each agrees to grant control over or use of a service of the property to a partner, or to engage in any other coordinating kind of activity which is valuable in combination with the property. (In terms of our model, each of these grants or acts can be deemed an x_i, and thus like all other services, cannot be effectively subject of legal enforcement)[39]

This notion that property "rights" are subject to continual, day-to-day, or even minute-to-minute fluctuations in content seems like an oxymoron. The very notion of "rights" seems to involve some fixity and

[39]Thus, for example, the adoption of married women's property acts probably did not result in any significant additional freedom of women to control property they legally and exclusively "owned" under the new legislation, except to the extent that their agreement not to terminate their marriage and thus take their termination contingent rights away with them was the primary service they were providing to their partner during the marriage and thus, of value only to a limited class of wealthy but otherwise unappealing women. Women who were able to furnish valuable services to their husbands during their marriages probably always exercised significant control over the property they personally furnished to the family as well as over property titled exclusively in the names of their husbands. Similarly, only men who provided very valuable services to their wives were likely ever to have had the power to control much of the property titled in the names of their wives.

reliability to the substance of their holder's entitlement. It should be noted here, however, that the permanency which accompanies the lawyer's notion of a right is not necessarily inherent in an economist's behavioral definition. (See note 1 supra.) Thus, when an economic environment is uninfluencable by law, the legal definition ceases to be significant, although on termination, when law begins to have some influence, the legal notion once again begins to have relevance.[40]

Our analysis does not imply that the terms of termination contingent doctrine cannot influence behaviors. It only implies that the behaviors to be influenced will be those occurring prior to or after the termination of the relationship, or, less relevantly, behaviors which do not effect the actor's relational partner. There are also potential distributional consequences of legal doctrines which seek to intervene in ongoing relationships which are beyond the scope of our present discussion, except to the extent that our model predicts that redistributional entitlements will take effect only on termination of any relationships they might otherwise be expected to effect.[41]

There is one other significant possibility that exogenous legal entitlements might have on relating parties, but only indirectly. The rents whose existence controls the behaviors of parties in relationships as we have modelled them are defined as gains which exceed those available to the parties over their next best opportunity, i.e. the market. Our analysis thus, does not imply that to the extent the law can enhance the value

---

[40]Our commentators have been disturbed by the normative possibility inherent in this conclusion, that potential relating parties cannot reliably make efficient, relationship-specific investments, protected from post-investment opportunism which legal property rights can provide. Our observation is that a potential relating party ought better to look to the value of services he or she can provide to and withhold from his or her future partner, as a means of protection from opportunism. Efficient relating parties have little to fear from opportunism, and inefficient relaters ought not to invest too much in relationships.

[41]Our argument is premised on the assumption that law influences behavior by imposing costs on non-complying parties, in the form of subjecting them to damage judgements, or incarceration for contempt, etc. We did not model the case in which law attempts to intervene in relating parties' lives by the grant of subsidies. Legal doctrines which tend to enhance the wealth of a party in a relationship may also enable such a party to provide services to a relational partner by sharing in the wealth gains provided by the subsidizing doctrine. Thus, for example, a repeal of all liability for income taxes on women would increase the welfare of married women, (with possible unsystematic income effects on their behaviors) despite the fact that they are in relationship. The existence of relationships likewise limits the power of the taxing authorities, since by intending to provide benefits exclusively to women, the taxing authority would also unwittingly benefit males who are in close relationships with benefitted women as well. Similarly, the best protection for a prospective employee may be the skills which generate rent for the employer rather than legal protection of employees' rights. Government can subsidize laborers, such that employers deem the subsidy among the services being delivered by the employee, and increase the amount of wages, better working conditions, or other services the employer is willing to provide. The intervention of juvenile courts in family life under the authority of Family-in-need-of-services (FINS) rationale, see supra note 12 might, in fact, be seen in part as an attempt to intervene in relationships by the use of subsidies.

of alternative substitute market opportunities it cannot weaken the value of the relationship. Indeed we would conclude from our analysis that the enhancement of market employment opportunities for women is as likely to explain the increase in the divorce rate over the last 50 years as is any other single factor (such as a claimed decline in morality), because it reduces the quantity of rents furnished by their husbands.

iii) Other possible limitations on the effectiveness of Law in Relationships:

Finally, the game theoretical mechanisms we have described which make the choice of resorting to law unattractive to all relating parties, may not be the only way of illustrating that the law is basically incapable of altering the relative wealths of parties who are in relationships, and thus civil remedies of a compensatory sort are unlikely to be operative within the confines of their relationship. That services are substitutable for each other, the very fact that makes value-oriented strategies feasible, has an additional impact: In order to give a legal remedy which protects a relating party's entitlement to any service, the enforcement authority must be able to control the provision of not only the service which is subject of the entitlement, but to all other services available in the relationship as well. The substitutability of services means that the party toward whom an enforcement order is directed, if he or she can be effectively compelled to deliver the services which are being legally compelled, can simply refrain from contributing other services of equivalent value which might otherwise have been furnished in the relationship. In effect, then, a relating party can pass back to the complaining party, any costs which the legal remedy imposes. The complaining party aware of this fact, is also unlikely to seek what can inevitably be a profitless resort to the legal entitlement. This is yet another reason why the law is incapable of intervening into the ongoing relationship. Courts face the same transaction costs as the parties do in specifying the future behaviors they wish to mandate. Once the stream of all services are cut off at its termination, however, then the legal remedy can no longer be offset by other unregulated behavior of the offending party, and thus the remedies regain their efficacy. Thus, just as the adoption of a value oriented strategy by potential legal defendants makes litigation irrational to potential plaintiffs, if plaintiffs play such a strategy themselves the same results may obtain whatever strategy the potential defendant plays.

V. THE LAW OF RELATIONSHIPS

A. FRIENDS AND NEIGHBORS:

The Economics of Relationships

It is a fair characterization of the Anglo-American law that there is no doctrine which seeks to enforce entitlements as among the participants in an ongoing close relationship, as we have economically defined that term. The most ubiquitous relationship, for instance, is that of friendship, yet there are no doctrines that impose any duties on persons which mandate behaviors toward their friends on account of the relationship. Friends are obliged not to commit crimes or torts against each other, and will have their contracts enforced, just as if they were strangers. In other words, doctrine takes no account of the relationship at all. If I trespass on my neighbor's land, and you do as well, our obligations toward the neighbor are the same irrespective that I am her neighbor and you are not. Our analysis predicts that the law would be ineffective in enforcing any legal entitlements as between relating parties during the course of their relationship, and thus is unlikely to adopt any such relational entitlements. That the law is willing, for purposes of the tort and criminal laws, to treat relating parties as if they were strangers is, then, under our analysis, probably tantamount to asserting that the law cannot effect the content of the relationship itself. Thus the parties are always free to terminate their efforts at providing services to each other and to return to the economic status of strangers, at which point they inherit the entitlements of strangers as well. Our analysis predicts that in the only circumstances in which the parties will resort to law, they will also be anticipating the end of their relationship, and thus explains and justifies the law's insistence that as far as legal entitlements are concerned, friends are indeed strangers.

B. SPOUSES AND BUSINESS PARTNERS:

There are legal doctrines, however, which do explicitly contemplate close human relationships. Friends and neighbors can be best viewed as providing reciprocal services to each other.[42] Business partners, on the other hand, organize their relationship so that the services they provide are apt to take the form of the acquisition of capital assets. Their efforts contribute toward the building up of a common fund or a collection of co-owned assets which represent the commercial profits from their joint efforts. Marital relationships likewise exhibit a tendency for the parties to acquire jointly owned assets, although they are also likely to contain a significant component consisting of the direct exchange of services which each consumes as they are provided, as well. The possibility exists, within the confines of these sorts of relationships, for the parties

[42]This intuition is widely shared, see, e.g. Blau, supra note 7.

to accumulate negative capital (liabilities) as a result of their joint efforts as well co-owned positive assets. One might anticipate, then, that for accumulative relationships, the law of property and contract would be needed by the parties to govern the relating parties rights and obligations toward each other and toward the rest of the world with respect to the jointly accumulated assets.

Anglo-American private law does, indeed, provide enforceable property entitlements to the parties who accumulated the property in the course of their relationship, *but traditionally will entertain claims to enforce those entitlements only in the event that the relationship is terminated,* what Saul Levmore colorfully styles as "Love it or leave it."[43] Spouses and business partners do indeed have legal rights to positive property (and obligations with respect to negative property) accumulated in the course of the relationship, but such entitlements are only divorce contingent. The law historically will not enforce an undertaking by one business partner in favor of another except in the context of an accounting conducted at the conclusion of the partnership. Likewise, the law will not intervene in an existing marriage except to provide either party a divorce.[44] These doctrines are explainable under our analysis because only when the exchange of services ceases is the law likely to be effectual in imposing an obligation on one party in favor of the other.

It is a consequence of our result in this study that litigation between spouses or partners should not even be observed, as long as efficient exchanges are possible and continuing. The unenforceability of intra-relational obligations during the life of the relation might even be explainable on the ground that no relating parties have ever urged the adoption of any legal entitlements. Nevertheless, it must be conceded that on some occasions, parties to legally recognized relationships have sought to litigate with their legally recognized partners, despite our prediction that such litigation should not be expected to occur. Economic relationships, as we have precisely defined them, are not coextensive at the margins with legal relationships. Since the courts in which such litigation has occurred have never had occasion to inquire about whether the litigating parties are continuing their involvement in the exchange of services, or whether there are available rents capturable from trade, however, it is difficult to determine whether the relationships in which litigation has (rarely)

[43]Saul Levmore, Love It or Leave It: Property Rules, Liability Rules, and Exclusivity of Remedies in Partnership and Marriage, 58 L. & Contemp. Probs. 221 (1995).

[44]Id., Levmore supra note 43

actually occurred, were in fact, economically dead at the time. If they were, there is nothing in our result to suggest that litigation might not be chosen by any (formerly) relating party.

C. CO-OWNERS:

The collective action problems which beset co-owners of assets are sufficiently grave that standard opinion holds co-ownership to be so inefficient as to be unexpectable.[45] At the same time, however, it appears that in the United States at least, most property is owned by more than one person, normally members of the same household.[46] Furthermore, the standard default regime at death of any asset owner, is to pass ownership by way of intestate succession, on to the decedent's heirs as co-owners.[47] If, as casual empiricism suggests, most co-owners are in a close relationship with each other, then the very misbehaviors which economic theorists have heretofore feared would create inefficiencies, may be solvable by the dynamics of the relationship. Any party engaging in hold-out or rent seeking behavior, will be treated by those in close relationship with him, just as if he had refused to supply expectable cooperative services, so that refraining from engaging in such behavior can be deemed the provision of a relational service like any other. Under our analysis, then, the parties have adequate means to police the failure to render the appropriate relational services to one another without the intervention of exogenous legal entitlements. Close relationships thus solve the collective action problems which might otherwise exist among relating co-owners. Our theory is thus an explanation for why co-ownership is ubiquitous at the same time that it engenders collective action problems.

There is much in the law of co-owned property to suggest that it too is based on the understanding that relationships will be characteristic of co-owners. Indeed, the general rule is that co-owners have no personal entitlements against each other that can be resolved other than by "partition," the co-ownership equivalent to a divorce, i.e. the judicial forced sale of the property and the division of the sale proceeds. This is a close relative to the love it or leave it rules which govern marriages and business partnerships. A standard treatise explains the rules this way:

---

[45]See, e.g. Ian Ayres & Eric Talley, Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Cosean Trade, 104 Yale L.J. 1027-117 (1995).

[46]Robert Ellickson, Property in Land, 102 Yale L.J. 1315-400 @ 1394-5 (1993).

[47]Uniform Probate Code Arts. 2-103, 2-106(B) (1990).

> The question of how much should be expended on repairs, their character and extent, and whether as matter of business judgment such expenditures are justified is, fundamentally, only one of the many questions which may arise between the cotenants in their use and enjoyment of the common property. The law cannot possibly settle such details where the cotenants do not agree. How the sleeping rooms in a family residence shall be occupied by the children of the deceased owner who become cotenants by inheritance or by his will, what crops shall be planted and where if the property so held is a farm, how business or manufacturing property may best be used and enjoyed are obvious illustrations. If the cotenants cannot agree neither law nor equity can settle such differences; nor can they specifically settle how the property shall be used and enjoyed. The law's remedy in all such cases is partition; if the cotenants cannot agree on repairs, and the cotenant in possession who makes such repairs is not compensated by the value of his possession and enjoyment, or by rents and profits for which he is accountable to the other, out of which he may deduct the cost of reasonable repairs, the final remedy is partition, and in that action he will be credited with such expenditures in the final accounting.[48]

The general rule that the courts will not entertain the claims of one co-owner against the other except in a partition action[49] are subject to a significant exception: Since the 14th century, the Statute of Anne[50] has provided for the conduct of civil actions by one co-owner against other cotenants with respect to the distribution of the rents and profits of the property. The Statute is widely regarded as part of the common law which became organic to American jurisdictions, and seems to represent a significant departure from the "love it or leave it" general rule as between cotenants. Whatever was the intent of the early English parliament, however, the courts have always construed the statute very narrowly, as applying only to the case in which the property was rented to a third party and the dispute is over the split of amounts collected from third parties.

Our analysis predicts that the law cannot effectively intervene, even in distributional questions, as between the parties to an ongoing relationship. It does not, however, have anything to say on the question

---

[48]American Law of Property ¶ 6.18, p. 78

[49]The rule also applies in civil code jurisdictions. See e.g. La. Civil Code Art. 803 (1990) under which the court will explicitly refuse to entertain or resolve disputes among co-owners as long as partition is available.

[50]4 Anne, C. 16 § 27 (1704).

whether co-owners are likely to be in a close relationship. If co-owners do not operate the jointly owned property, however, but instead contract for the operation with a third party, the only case covered by the court's interpretation of the Statute of Anne, it is not as likely that they will be engaged in the exchange of services with each other, and thus unlikely that they will be parties to a close relationship. In such circumstances, then, the co-owners will likely effectively be strangers, in which case their legal entitlements are practically enforceable, and arguably necessary to solve the collective action problems which may arise between them.

D. FRANCHISORS AND FRANCHISEES:

The problem of an oil refiner or fast food marketing business in defining ex ante, the precise services it expects from the operators of the service stations and restaurants who deal with the eventual product consumers, is similar to that faced by parties in relationships: That the future contingencies are so numerous and varied as to make ex ante contracting an inefficient activity. This is widely recognized in the legal literature which addresses franchise contracts.[51] It is likewise recognized that the franchisee has perverse incentives to shirk on product quality as a means of free riding on the franchisor's reputational assets, but that the franchisor who insists on control of assets owned by the franchisee likewise has perverse incentives to engage in opportunism. Nevertheless, the courts have refused to respond to the complaints of franchisees against their franchisors, adopting a rule which extends the privileges of "business judgment" to the franchisor,[52] a rule which, in effect, holds that the behavior of the franchisor is unreviewable. This rule, we submit, is the functional equivalent of a rule which refuses to intervene in the conduct of the relationship, and indeed is a recognition of the fact that the law is powerless to intervene as is predicted by our analysis.

E. EMPLOYERS AND EMPLOYEES:

Another common relationship which can be modelled as the frequent exchange of services is that which exists between master and servant. That the servant provides services is apparent. That the master, in continually defining the tasks to be performed and in establishing the working conditions, in addition to the payment of periodic wages is providing a constant stream of services in return may not be so obvious, but is

[51]See, e.g. Gillian Hadfield, Problematic Relations: Franchising and the Law of Incomplete Contracts, 42 Stan. L. Rev. 927 (1990).

[52]Hadfield supra note 51 @ 981-2.

nevertheless plausible. The legal doctrine which is prevalent in regulating the employment relationship is the "employment at will" doctrine, under which the employee may resign and the employer may terminate the employment at any time for any reason, unless the employment was expressly contracted to be for a fixed term.[53] "Permanent" employment contracts, or contracts "for life" are interpreted as being "at will." As with friends, the law will enforce contracts and grant the entitlements of tort, property and criminal law to employers and employees alike, but on the same basis as if they were strangers. One corollary of the "at will" doctrine, however, is that either party asserts a claim to an entitlement during the course of the relationship subject to the possibility that the other party may exercise at any time an absolute discretion to terminate the relationship.

There is a significant volume of legal literature which urges that the unreviewable discretion awarded employers in particular under the "at will" doctrine, be narrowed so as to give employees an entitlement not to be terminated in "bad faith" or for reasons which contravene some public policies (e.g. policies which encourage "whistle blowing").[54] It is a fundamental proposition of federal civil rights law that dismissals on forbidden discriminatory grounds give rise to the remedy of reinstatement to the position of employment from which the employee was wrongfully terminated.[55] The "at will" doctrine, minus its civil rights (and developing "bad faith") exceptions, is nevertheless explainable on the grounds that courts seem to realize that their only efficacy in employer/employee disputes is to confirm the right to terminate the relationship. The relative day-to-day rights within the relationship are simply beyond the reach of law.

CONCLUSIONS

In this study, we identified and carefully described the economic institution of the two-party[56] close human relationship, noting that it consists of a far narrower class of phenomena than users of the term

---

[53]See Andrew Morriss, Exploding Myths: An Empirical and Economic Reassessment of the Rise of Employment at Will, 59 Mo. L. Rev. 679 (1994).

[54]See e.g. John Devlin, Reconsidering the Louisiana Doctrine of Employment at Will: On the Misinterpretation of Article 2747 and the Civilian Case for Requiring "Good Faith" in Termination of Employment, 69 Tulane L. Rev. 1513 (1995); Clyde Summers, Individual Protection Against Unjust Discharge: Time for a Statute, 62 Va. L. Rev. 481 (1976).

[55]Title VII of the Civil Rights Act of 1964, 42 U.S.C. §§ 2000e-2000h(West 1988 & Supp V 1995).

[56]It follows that our theoretical explanation for the UH, for example, is not comprehensive. The UH intuition has been speculated upon as applicable to larger groups like families, and perhaps even primitive tribes. Ellickson, supra note 46. We do not claim here to have provided a theoretical explanation for the validity of the UH in such settings.

"relationship" usually restrict themselves. We then argued that many relationships which are legally recognized, consist in substantial part of economic relationships as well, although the two categories are not co-extensive. Persons can be legally married, for example, but because they have long been separated, are not in an economic relationship because their interactions, if any, no longer create rents. Relationships are socially important because they permit people to exploit opportunities for mutual gain which are unavailable to them in the market, their next best opportunity. Relationships are observed, we conclude, because they are efficient.

En route, however, we show that relationships are difficult to enter because the parties to them must typically first overcome the structure of a standard prisoners' dilemma in which, although cooperative equilibria exist to realize efficiency gains from trade, such trade is foreclosed by a dominate strategy equilibrium of noncooperation. We then speculate, however, with some basis in casual empiricism, that relationships may nevertheless form in the presence of negative marginal cost activity in an environment of unavailable information. Once formed, on the other hand, we argue, that the exchanges which typify the economic relationship, also convey copious information to the traders about each other's desires and capabilities. Thereafter, we proceed by assuming that the parties are well informed about each other.

The very efficiency of each party to a relationship, in providing benefits to his or her relational partner above what is available to the partner in the market, we show, makes resort to law by parties in an ongoing relationships superfluous. Given the economic structure of legal rules, each party is a much more efficient inducer of desired reciprocal behavior than exogenous legal rights are apt to be. Furthermore, given the complexity of even simple relationships, legal regulation of behavior is apt to be prohibitively expensive to be effective. Our conclusion follows, that creation of exogenous legal entitlements are likely not to be a wise response to the complaints of ill treatment by parties within relationships. Resort to the law is an admission that the plaintiff has lost the capability to continue to create valuable above-market rents for his or her partner. The law's appropriate response, then, is to terminate the relationship. The parties are best left to their market opportunities if their relational behavior no longer generates extra-market rents. Existing legal doctrine thus would predictably offer to terminate relationships but would refuse to enforce "rights" claimed within the context of the relationship while it continues to be ongoing. Lawmakers might be motivated to adopt such "love-it-or-leave-it" doctrines because they recognize their powerlessness to effectively intervene. On the other

hand, the doctrines may have evolved because the only parties who will likely ever resort to the law are recognized to have abandoned their economic relationship by the very fact of deciding to litigate.

These conclusions about the efficient shape of the law of relationships have been intuited before by others. They have been induced empirically by anthropologists and sociologists and inferred even by legal scholars. That they have never been explicitly modeled stems from the imprecision in the predictions of game theoretical equilibria in the face of the folk theorem. In order to rigorously derive our results, we were obliged to develop a technique for reducing the number of credible equilibria which a human relationship might be expected to generate. We accomplished this result by identifying two types of collective action failures which we styled "unilateral inefficiencies" and "bilateral inefficiencies." While the creation of a relationship by entry into repeated dealings creates the conditions under which solutions to both sorts of inefficiency were possible, we also showed that relationships do not guarantee efficient outcomes in all cases. We did show, however, that there is a set of "value-oriented" strategies which are available to relating parties which will eliminate the possibility of unilateral inefficiencies within an ongoing relationship. Indeed, our primary conclusion that resort to the law will be ineffectual and never be observed stemmed from the fact that resort to the law is itself a unilaterally inefficient action, eliminated by resort to value oriented strategies.

That bilateral inefficiencies can persist, even in repeated play suggests that future research should concentrate on the science of resolving them, even though the creation of a regime of legal rights cannot be a solution. Nevertheless, where law is likely to be ineffective, our analysis suggests, efficient self-reliance is not only inevitably a relating party's exclusive option to obtaining satisfaction. It is also likely to provide an adequate substitute for whatever one might hope to achieve from exogenous legal entitlements as well.