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BRAIDING: THE INTERACTION OF FORMAL AND INFORMAL CONTRACTING IN THEORY, PRACTICE AND DOCTRINE.

Ronald J. Gilson,* *Charles F. Sabel*** & *Robert E. Scott****

This article studies the relationship between formal contract enforcement, where performance is encouraged by the prospect of judicial intervention, and informal enforcement, where performance is motivated by the threat of lost reputation and expected future dealings or a taste for reciprocity. The incomplete contracting literature treats the two strategies as separate phenomena. By contrast, a rich experimental literature considers whether the introduction of formal contracting and state enforcement “crowds out” or degrades the operation of informal contracting. Both literatures, however, focus too narrowly on formal contracts as a system of incentives for inducing parties to perform substantive actions, while assuming that the effectiveness of informal enforcement depends on pre-existing levels of trust. As a result, current scholarship misses the relationship between formal and informal contract mechanisms characteristic of contemporary contracting in practice. Parties are responding to rising uncertainty by writing contracts that intertwine formal and informal mechanisms – what we call “braiding” -- in a way that allows each to assess the disposition and capacity of the other to respond cooperatively and effectively to unforeseen circumstances. These parties agree on formal contracts for exchanging information about the progress and prospects of their joint activities, and it is this information sharing regime that “braids” the formal and informal elements of the contract and endogenizes trust. We argue that the low-powered enforcement associated with the formal governance structure in these braided contracts complements rather than crowds out the informal mechanisms that rely on increasing levels of trust. We examine the braiding phenomenon in a variety of contexts characterized by rising uncertainty. These range from the uncertainties of technological innovation to commercial ventures and corporate acquisitions where the uncertainty centers on the importance of the search for new partners. In each instance, courts appear to have harnessed the braiding phenomenon by using low-powered sanctions to protect formal contractual “preliminaries” without creating potential liability that will crowd out informal contracting. This technique allows potential collaborators to explore and develop their relations but it does not impose mutually enforceable obligations to pursue a particular project. But despite the wisdom of temperate enforcement of braided contracts, courts that emphasize the contemporary duty to negotiate in good faith are often tempted to expand the legal sanction and thereby unwittingly undermine the very informal arrangements that braided obligations are designed to support. We conclude, therefore, by explaining how courts can best support the braiding strategies that are critical to the success of an integrated regime of formal and informal contracting.

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INTRODUCTION

This article is a study in the relationship of formal and informal contract enforcement. Traditional analysis has contracting parties choosing between two modes of encouraging performance of obligations and enforcing those obligations in the event of non-performance. They may choose by formal contract to enlist the state through the judicial system to assess the parties' performance of their specified rights and obligations and impose remedies in the event of breach. In turn, the expectation of formal enforcement creates incentives for parties to perform their obligations. Alternatively, parties can agree informally to an exchange or collaboration and enforce the agreement informally by their actions alone, without judicial intervention. In this case, the fear of losing expected future dealings with the counterparty, the threat of loss of reputation with the resulting reduction in future business with other potential counterparties in the relevant economic and social communities, or an individual taste for reciprocity encourages performance and penalizes breach.

A burgeoning literature recognizes the distinction between the two strategies, but the two main strands of the literature approach the problem of enforcement with different emphases. The theoretical literature on incomplete contracting regards formal and informal contracting as separate phenomena. Here the focus is either on how parties with incomplete information can write formal contracts so that powerful courts can compel efficient trade¹ or, in the alternative, how parties can harness reputational constraints and the discipline of repeated dealings to secure voluntary enforcement when formal enforcement is ineffective.² Both lines of analysis,

¹ See, e.g., Jean Tirole, *Incomplete Contracts: Where Do We Stand?*, 67 *Econometrica* 741 (1999); Benjamin Hermalin & Michael Katz, *Judicial Modification of Contracts Between Sophisticated Parties: A More Complete View of Incomplete Contracts and Their Breach*, 9 *J.L. ECON. & ORG.* 98 (1993); Sanford J. Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 *J. POL. ECON.* 691 (1986); Oliver D. Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 *J. POL. ECON.* 1119 (1990); Aaron S. Edlin & Stefan Reichelstein, *Holdups, Standard Breach Remedies, and Optimal Investment*, 86 *AM. ECON. REV.* 478 (1996).

² See, e.g., Benjamin Klein, *Why Hold-Ups Occur: The Self-Enforcing Range of Contractual Relationships*, 34 *ECON. INQUIRY* 444 (1996); Robert E. Scott, *Conflict and Cooperation in Long-Term Contracts*, 75 *CAL. L. REV.* 2005, 2039-2050 (1987); Janet Landa, *A Theory of the Ethnically Homogenous Middleman Group: An Institutional Alternative to Contract Law*, 10 *J. LEGAL STUD.* 349 (1981). An excellent survey of early informal enforcement

however, pay scant attention to the relationship between the two types of enforcement, and particularly how reliance on one type interacts with reliance on the other.³

By contrast, a rich experimental literature explicitly considers the interaction between formal and informal enforcement.⁴ The central question here is whether the introduction of formal contracting and state enforcement “crowds out” or degrades the operation of informal contracting. For example, informal sanctions based on reputation may be displaced when the existence of a formal obligation turns a normative duty into a calculation of self-interest—a Holmesian choice between two legal rules without reputational implications. In such cases of crowding out the two enforcement strategies are substitutes. Alternatively, the two techniques are complements when each strategy reinforces the effectiveness of the other. Thus, an explicit contract that can cover most but not all of the parties’ obligations is complimented if the remaining obligations can be enforced informally and the contract as a whole is workable, whereas its components taken separately were not. This experimental literature recounts much evidence of substitution but much less of complementarities.⁵

mechanisms is Avner Grief, *Informal Contract Enforcement: Lessons from Medieval Trade* in 2 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND LAW 287 (Peter Newman, ed. 1998).

³ For exceptions, see George Baker, Robert Gibbons & Kevin Murphy, *Relational Contracts and the Theory of the Firm*, 117 Q. J. Econ. 39 (2006); George Baker, Robert Gibbons & Kevin Murphy, *Contracting for Control*, (March 21, 2006) available at <http://www.law.columbia.edu/null/Contracts+Conf+-+April+7-8,+2006>; Ronald H. Gilson, *Engineering a Venture Capital Market: Lessons from the American Experience*, 55 STAN. L. REV. 1067 (2003) (mixed formal and informal contracting in venture capital); Robert E. Scott, *A Theory of Self-Enforcing Indefinite Agreements*, 103 Colum. L. Rev. 1641 (2003) (discussing the rivalrous relationship between formal and informal enforcement of deliberately indefinite agreements); ROBERT E. SCOTT & PAUL B. STEPHAN, *THE LIMITS OF LEVIATHAN: CONTRACT THEORY AND THE ENFORCEMENT OF INTERNATIONAL LAW* 88--110 (Cambridge 2006) (same).

⁴ See e.g., Ernst Fehr, Alexander Klein & Klaus M. Schmidt *Fairness and Contract Design*, 75 *Econometrica* 121 (2007); Ernst Fehr & Klaus M. Schmidt, *Adding a Stick to the Carrot? The Interaction of Bonuses and Fines*, 97 *Amer. Econ. Rev.* 177 (2007); Ults Martin Brown, Armin Falk & Ernst Fehr, *Incomplete Contracts and the Nature of Market Interactions*, Institute for Empirical Research in Economics, University of Zurich, Working Paper No. 38 (2001). See also Ernst Fehr & Klaus M. Schmidt, *Theories of Fairness and Reciprocity B Evidence and Economic Applications*, University of Zurich, Institute for Empirical Research in Economics, Working Paper No. 75, at 6-7 (2001); Ernst Fehr, Simon Gächter & Georg Kirchsteiger, *Gift Exchange and Reciprocity in Competitive Experimental Markets*, 42 *Eur. Econ. Rev.* 1 (1998); Gary Charness, *Responsibility and Effort in an Experimental Labor Market*, 42 *J. Econ. Behav. & Org.* 375 (2000); Ernst Fehr & Armin Falk, *Wage Rigidity in a Competitive Incomplete Contract Market*, 107 *J. Pol. Econ.* 106 (1999); Simon Gächter & Armin Falk, *Reputation or Reciprocity*, Institute for Empirical Research in Economics, University of Zurich, Working Paper No. 19 (1999).

⁵ Compare the following studies finding evidence of crowding out, Daniel Houser, Erte Xiao, Kevin McCabe & Vernon Smith, *When Punishment Fails: Research on Sanctions, Intentions and Non-Cooperation*, 62 *Games & Econ. Behav.* 509 (2008); Ernst Fehr & Simon Gächter, *Do Incentive Contracts Crowd Out Voluntary Cooperation?*

For all of their vibrancy, moreover, the incomplete contracting and experimental literatures fail to explain key elements of contemporary contracting. What the literatures do not explain in theory, real businesses are accomplishing in practice: Parties in rapidly innovating industries are responding to rising uncertainty and the need to access important competencies from outside the firm. These parties write contracts that intertwine formal and informal contract mechanisms in a way that allows each to assess the disposition and capacity of the others to respond cooperatively and effectively to unforeseen circumstances.⁶ Here the informal obligations interact within a formal governance structure that regulates the exchange of highly revealing information but does not necessarily impose legally enforceable obligations to buy or sell anything. All of these efforts share a common focus: collaborative innovation.

In a recent article, we called attention to how this growing uncertainty—the ever more opacity of what the future holds—has stimulated broad changes in industrial organization.⁷ We observe the vertical dis-integration of firms, the expansion of collaborative research and development across firm boundaries, and at the intersection of these, the rise of platform production (where the “operating system” and the “applications” it integrates are co-developed by independent producers). The development of the Boeing 787 aircraft is a good example of this phenomenon and of its challenges. Innovation in the design and manufacture of the wing is the

University of Zurich, Institute for Empirical Research in Economics (2000); Iris Bohnet, Bruno Frey, & Steffen Huck, *More Order with Less Law: On Contract Enforcement, Trust and Crowding*, 95 *Am. Pol. Sci. Rev.* 131 (2001); Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 *J. Legal Stud.* 1 (2000); Edward L. Deci, R. Koestner, & Richard M. Ryan, *A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation*, 125 *Psych. Bull.* 627 (1999) with several studies finding complementarity: Sergio Lazzarini, Gary J. Miller & Todd R. Zenger, *Order with Some Law: Complementarity versus Substitution of Formal and Informal Arrangements*, 20 *J. L. Econ. & Org.* 261 (2004); and Mary Rigdon, *Trust and Reciprocity in Incentive Contracting*, 70 *J. Econ. Behav. & Org.* 93 (2009).

⁶ See examples of collaborative contracts and supporting sources in note --- infra and accompanying text.

⁷ Ronald J. Gilson, Charles F. Sabel & Robert E. Scott, *Contracting for Innovation: Vertical Disintegration and Interfirm Collaboration*, 109 *Colum. L. Rev.* 431 (2009). In this article, as in our earlier article, we define uncertainty in Knightian terms. See generally FRANK H. KNIGHT, *RISK, UNCERTAINTY AND PROFIT* (1921). In Knight’s usage, uncertainty is distinguished from risk. Risk exists when alternative future states of the world occur with quantifiable probability: The future can be expressed as a probability distribution. Uncertainty exists when alternative future states of the world do not occur with quantifiable probability. The distinction between risk and uncertainty is a useful way to illustrate the manner in which accelerating technology and global competition have created unique circumstances that resist probabilistic classification.

province of one supplier (or group of suppliers) and is dependent on the design and manufacture of the fuselage, which is the province of a different supplier (or group of suppliers), and vice versa. Thus, innovation in one structure must mesh with innovation in the other in order for either to be successful, a process with great promise in joining cutting edge technologies, but which presents great challenges in coordinating the effort. In diverse industries ranging from contract manufacturing to supply chain contracts between manufacturers and suppliers to pharmaceutical collaborations, these changes are accompanied by an increase in inter-firm relations with both parties expecting to innovate jointly.⁸

We call the legal instrument that facilitates this interfirm collaboration a contract for innovation, and show that it aims to build trust, and problem-solving capacity more generally, by a combination of formal and informal contracting techniques we call “braiding.”⁹ Contracting for innovation supports iterative collaboration between firms by interweaving formal and informal terms that respond to the uncertainty inherent in the innovation process: The inability of the parties to specify *ex ante* the nature of the product to be produced or its performance characteristics means that the terms of performance will be determined by the very governance process the contract creates.¹⁰

⁸ For discussion of the core contractual features characteristic of these various exemplars, see *id.* at 458-71.

⁹ *Id.* at 435, 486-89.

¹⁰ *Id.* at 435. In our earlier article, we described in the following terms the character of the contracting problem facing parties in the rapidly innovating industries that we investigated:

In some markets and for some products, increases in the complexity of the technology and in the rate of change have made it difficult for a single firm to sustain state-of-the-art capacity across all the technologies necessary for successful product development. The response has been collaborative innovation across organizational boundaries with, for example, upstream and downstream participants in the supply chain specializing in particular technologies and the ultimate product resulting from cooperation among different organizations, each having contributed its special expertise.... In the new arrangements, innovation is the product of a joint effort by two or more organizations; it is metaphorically situated between them and is dependent on both. Innovation is thus a collaborative and iterative process rather than a discrete product supplied by a party upstream in the supply chain according to specifications set by a downstream customer....

[T]he transactions governed by these contracts share a number of characteristics. First, the primary output is an innovative “product,” one whose characteristics, costs, and manufacture, because of uncertainty, cannot be specified *ex ante*. Second, neither party alone has the capacity to specify and develop the product’s characteristics, costs, and methods of manufacture; hence, there must be collaboration among companies with different capabilities. Third, the process of specification and development will be iterative: Individual design elements will depend on the recurrent input from those working upstream or downstream and from those working on other design elements. Thus, central to these transactions are communication and cooperation across the two (or more) firms—the design, specification, and determination of manufacturing

This interaction and the contracting methods on which it is based are simply not contemplated by contract theory. And while the growing literature that uses experimental techniques to explore informal contracting does contemplate the potential for parties to combine formal and informal contracting, these studies all assume that the effectiveness of informal enforcement of a particular contract is exogenous: a feature or endowment of the setting or the parties, not a result of the relation they deliberately create amongst themselves.¹¹ Put differently, in this literature the parties' contract in light of the pre-existing level of trust between them, rather than with a view to creating it.

In this article, we take a wider view of formal and informal contract mechanisms and the relations between them than that afforded either by current contract theory or by the experimental investigations. More specifically, we argue that current scholarship focuses too narrowly on formal contracts as a system of incentives for inducing parties to perform substantive actions, while assuming that the effectiveness of informal enforcement depends on pre-existing levels of trust. In doing so, the discussion overlooks the possibility that the parties can and do agree on formal contracts for exchanging information about the progress and prospects of their joint activities, and that these same information exchanges provide the foundation for increasing the pre-existing level of trust. It is this information sharing regime that “braids” the formal and informal elements of the contract and endogenizes trust.¹²

characteristics will be the result of repeated interactive collaborative efforts by employees of separate firms with distinct capabilities.

Id. at 448-51.

¹¹ As we discuss below, there are two separate strands of the informal enforcement literature: one strand relies on reputation and/or the anticipation of future dealings and the other relies on character – either a taste for reciprocity independent of an economic return to that behavior or those who by character do not behave opportunistically. *See* TAN *infra* and sources cited in notes 2 and 4 *supra*. If one is starting from an assumption that these factors are exogenous, then maintaining the distinction among each strand is relevant. But as we show, the key element in contracting for innovation is a braiding mechanism in which the various strands of informal enforcement evolve: they are endogenous and as such they are complementary. Thus, while the categories of informal enforcement mechanisms are conceptually distinctive, because of their complementarity they are not distinctive in operation.

¹² The concept of trust is famously hard to define. In this article, we extend the generic term “trust” in two ways; first, to refer to the complementary combination of informal mechanisms –reputation, continuing relations and reciprocity--that evolve through the actions of the parties in implementing their substantive goals under the agreement; and second, in the increasing confidence of each party in the ability of the other to actually perform as the agreement requires.

In the prototypical case, the information regime characteristic of these braided contracts is designed to make it easy for each party—through representatives actually engaged in the collaboration—to request clarification from the other, but make it difficult to hold obstinately to convictions in the face of compelling information to the contrary. Thus, the information regime allows for the joint interpretation of ambiguity, and makes observable to the parties actions that would be opaque in an unstructured, informal exchange.¹³ This heightened, mutual observability allows the parties to learn about their respective capabilities as well as their disposition to cooperate. Under these conditions, continuing cooperation builds trust (in the narrow sense of confidence that the other party will not take advantage of vulnerabilities created by mutual dependence) and, as we will explain below, protects each party’s reliance on that trust in its substantive performance by increasing the parties’ switching costs—the costs of finding an alternative partner capable of reliably doing, and learning, as much as the current one.

The information exchange that braids formal and informal elements is itself neither fully formal nor fully informal by conventional criteria, but rather is a mixture or hybrid of both types. It is not a formal incentive system in the conventional sense; neither party secures a calculable benefit by meeting its terms. In the early and often prolonged stages of joint innovation, each party is typically free to discontinue the relationship in light of the information that is furnished. Moreover, there are no penalties for a failure to comply other than discontinuance of the relationship, unless the deficient party engages in “red-faced” cheating (for instance, secretly disclosing to a competitor information obtained from the exchange) or otherwise makes blatantly strategic use of the information acquired.¹⁴ Nor is the information exchange regime a simple declaration of a duty of reciprocity, or, as it is often called, a gift relation, in which the parties simply and generally pledge to exchange like (information) for like.¹⁵ On the contrary, in a

¹³ See TAN *infra*.

¹⁴ See e.g., TAN *infra* at --- and the discussion of *Eli Lilly & Co. v. Emisphere Technologies Inc.*, 408 F. Supp. 2d 608 (S.D. Ind. 2006).

¹⁵ The experimental literature has focused significant attention on so-called “gift exchange” relations. The Gift Exchange Game, for example, demonstrates that a large number of responders will voluntarily reward actions that they perceive as generous or fair. In the game, the Proposer offers a sum of money between 1 and 10 units (imagine that it is a salary offer). The Responder can either accept or reject the offer. If she rejects both subjects receive nothing. If the Responder accepts, she must then expend some amount of effort (think of it as job performance) that is costly to her. Standard rational choice theory predicts an equilibrium in which the Responder will always choose

braided contract the parties formally obligate themselves to provide certain kinds of information, at specified intervals, at generally agreed levels of resolution. Economists call such qualified relations of reciprocity “quasi-gift” exchanges, and speak of “low-powered” incentives to describe systems of reward and penalty aimed at orienting behavior toward ongoing collaboration rather than directing action to contractually specified tasks.¹⁶ By establishing mechanisms that allow the parties to learn each other’s capabilities and character, the braiding regime connects both the formal and informal components of contracting but is reducible to neither.

Beyond showing how the braiding of formal and informal contracting improves the performance of both techniques, a second aim of this article is to extend the reach of our earlier work. The focus in our first article was on technological innovation. Here we consider innovation more broadly as including projects in non-technology settings that share with technology projects a common feature: the project’s precise goal and manner of development only become clear in the course of the parties’ collaboration.¹⁷ We show that in a variety of contexts, ranging from preliminary agreements to pursue jointly a project that cannot be defined ex ante to the desire to stimulate synergies through corporate acquisitions, it is this uncertainty about future states of the world, and not some attribute of technical knowledge, which gives rise

the lowest possible effort level. Anticipating this, the Proposer will always propose the lowest possible salary offer. But the results directly contradict the self-interest hypothesis. All of the studies confirm that the average effort is positively correlated to the offered wage. This implies that responders, on average, will reward generous salary offers with generous efforts even when it is costly for them to do so. Ernst Fehr & Klaus M. Schmidt, *Theories of Fairness and Reciprocity – Evidence and Economic Applications*, in ADVANCES IN ECONOMIC THEORY, EIGHTH WORLD CONGRESS OF THE ECONOMETRIC SOCIETY 208 (2003), also available at University of Zurich, Institute for Empirical Research in Economics, Working Paper # 75 2-3 (2001); Fehr, Kirchsteiger & Reidl, *Gift Exchange and Reciprocity in Competitive Experimental Markets*, 42 Eur. Econ. Rev. 1 (1998); Gary Charness, *Responsibility and Effort in an Experimental Labor Market*, 42 J. Econ. Behav. & Org. 375 (2000); Ernst Fehr & Armin Falk, *Wage Rigidity in a Competitive Incomplete Contract Market*, 107 J. Pol. Econ. 106 (1999); Simon Gächter & Armin Falk, *Reputation or Reciprocity*, Institute for Empirical Research in Economics, University of Zurich, Working Paper # 19 (1999).

¹⁶“Low powered” incentives motivate parties to engage in mutually cooperative behavior as distinct from “high powered” incentives that induce parties to perform tasks that produce specific substantive outcomes. For discussion, see David Guest, *Management and the Insecure Workforce: The Search for a New Psychological Contract*, in EDMUND HEERY AND JOHN SALMON, EDS., THE INSECURE WORKFORCE, 140–54 (2000); David Marsden, *The Network Economy and Models of the Employment Contract*, LSE Research Online (August 2005), available at <http://eprints.lse.ac.uk/archive/00000355>.

¹⁷ As discussed in more detail TAN __ infra, we mean to distinguish innovation from incremental improvements that grow out of existing technology or patterns.

to the braiding mechanisms in contracting for innovation. In investigating this more general case, moreover, we discover that courts are beginning to impose what we call “low-powered” legal enforcement of the formal elements of braided contracts. Sanctions are imposed, for example, in the guise of a duty to negotiate in good faith, while leaving the substantive obligations contemplated by the contract subject only to informal enforcement. Thus, the effort to bring both theory and experimental work current with contemporary practice also aims to provide guidance to courts in enforcing braided contractual strategies, where either too little or too much judicial involvement will undermine the interaction between formal and informal enforcement central to braiding.

The Article proceeds as follows. In Part I, we first show that formal and informal contracts are preferred in quite different situations. When outcomes can be verified by courts empowered to compel disclosure of relevant information, formal contracts are preferred; where outcomes are hard to characterize, and therefore difficult to verify, but the activity is observable to the parties, informal contracts are feasible. But when uncertainty increases, making it hard for the parties to observe whether particular actions are cooperative or not, *and* also hard for courts to determine ex post what counts as a good outcome, both informal and formal strategies can fail. The response to this breakdown might seem to lie in some fusion or hybrid of the formal and informal. But contract theory treats formal and informal contracting as separate domains and experimental economics by and large treats formal and informal mechanisms as rivalrous, the introduction of formal enforcement, as conventionally conceived, crowding out the informal mechanisms otherwise available to the contracting parties.¹⁸

¹⁸ The tendency for crowding out will become a near inevitability when, as currently the case in Anglo-American contract law, formal enforcement assigns responsibility for an eventual breach of the agreement to one and only one party. No party will want to bear the costs of being adjudged the sole breacher, so all compete to show compliance with the express terms of the contract; this competition distorts actual behavior and perceptions of it, devaluing or crowding out informal observation of actions and intentions as a means of contractual enforcement. See discussion TAN *infra*.

This kind of crowding out is a contemporary, micro-level variant of what has been repeatedly described as a society-wide or macro-level conflict between market-exchange and extra-market trust on which market exchange is based. An early and especially influential expression of this tension is Durkheim’s argument that the interpretation of contracts depends on a social background of pre-contractual norms of reciprocity. See e.g., EMILE DURKHEIM, *THE DIVISION OF LABOR IN SOCIETY* 211-16 (George Simpson trans., 1964). For a contemporary version, see J.R. BECKERT, R. DIAZ-BONE, ET AL., *MÄRKTE ALS SOZIALE STRUKTUREN* (2007). Later variants include Polanyi’s idea that market relations can only be effectively regulated when “embedded” in society, and Bell’s concern that capitalism is imperiled by a “cultural contradiction,” as the self-seeking encouraged by market participation inexorably undermines the solidarity values on which markets ultimately depend. See KARL POLANYI, *THE GREAT*

To move beyond this long-standing impasse, Part II builds on the analysis of when formal contracting will crowd out informal contracting by introducing the concept of braiding—using formal contracting to endogenize increased trust by making the parties’ capabilities and character observable, which in turn serves to raise switching costs that support informal enforcement of the parties’ substantive obligations. We argue here that the fact that the informal mechanisms are endogenous to the contract and largely a creature of the formal mechanism of information exchange may well eliminate the risk of crowding out. We show, moreover, that increasing switching costs gradually, by building trust and enhancing problem solving capacity incrementally, is much less risky than attempting to make switching costs prohibitively high either by entering binding, long-term agreements with particular partners or, equivalently, picking partners on the basis of a common culture of reciprocity. On the one hand, long-term binding agreements can create perverse incentives for the project partners to treat the collaboration as a dumping ground for problems internal to each. On the other hand, reliance on preexisting culture as a criterion of selection increases the chances that the counterparty will lack the capacity to meet the long run need to collaborate effectively, thus raising the costs of *not* switching partners and thereby lowering switching costs.¹⁹

Finally, in Part III we consider contexts in which courts appear to recognize and harness the braiding phenomenon through low powered judicial enforcement of the formal elements of a contract for innovation. We argue that in an uncertain world searching for (new) partners and learning their capabilities and characteristics are an important part of collaborative partnering. In a world where such search is pervasive, these courts use low-powered sanctions to protect formal contractual “preliminaries” without creating potential liability of a size that will crowd out the informal contracting necessary to the collaboration. This technique allows potential collaborators to explore and develop their relations but it does not impose mutually enforceable obligations to pursue a particular project. But despite the wisdom of temperate enforcement of

TRANSFORMATION: ECONOMIC AND POLITICAL ORIGINS OF OUR TIME (1944); and Daniel Bell, *The Cultural Contradictions of Capitalism*, 6 J. Aesthetic Ed. 11 (1972).

¹⁹ Reliance on pre-existing culture obstructs the joint problem-solving activities needed to build the mutual capacity for adaptation necessary for successful long-term relations. See discussion TAN *infra*.

braided contracts, courts that focus solely on the current legal doctrine (with its emphasis on the duty to negotiate in good faith) are often tempted to expand the legal sanction and thereby unwittingly undermine the very informal arrangements that braided obligations are designed to support. We conclude, therefore, by articulating a theory that explains how courts can best support the braiding strategies that are critical to the success of an integrated regime of formal and informal contracting.

I. THE ENFORCEMENT DILEMMA: THE PROBLEM OF UNCERTAINTY

The academic literature long has recognized that there are two discrete methods of contracting—one formal and legally enforceable and the other informal and subject only to self-enforcement.²⁰ In discussing contract enforcement, however, contemporary contract theorists typically assume that formal and informal methods are distinct and separate responses to the problem of motivating relation-specific investments in a collective enterprise. If the threat of opportunism can be addressed by specifying state contingent outcomes or by assigning decision rights among the parties, then we observe formal contracting; if not, then we observe either self-enforcing informal contracts supported relationally or, if informal contracting cannot protect specific investment, we observe vertical integration.²¹ The contract theory literature has thus contemplated a hierarchy of contractual supports for specific investment, leaving the possibility of interaction between formal and informal methods of enforcing contractual commitments to scholars working in experimental economics. This literature uses experiments to address whether the two strategies are substitutes, in the sense that the introduction of formal contracting

²⁰ For a representative sampling of the literature, see Stewart Macaulay, *Non-Contractual Relations in Business: A Preliminary Study*, 28 Am. Soc. Rev. 55 (1963); Robert E. Scott, *Conflict and Cooperation in Long-Term Contracts*, 75 Calif. L. Rev. 2000 (1987); David Charny, *Non-Legal Sanctions in Commercial Relationships*, 104 Harv. L. Rev. 373 (1990); John McMillan & Christopher Woodruff, *Private Order Under Dysfunctional Public Order*, 98 Mich. L. Rev. 2421 (2000); Robert E. Scott, *A Theory of Self-Enforcing Indefinite Agreements*, 103 Colum. L. Rev. 1641 (2003).

²¹ See e.g., Sanford J. Grossman & Oliver Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 J. Pol. Econ. 691, 697–700 (1986); Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 J. Pol. Econ. 1119, 1151 (1990); Oliver E. Williamson, *Transaction-Cost Economics: The Governance of Contractual Relations*, 22 J. L. & Econ. 233 (1979); Oliver Williamson, *Assessing Contract*, 1 J. L. Econ. & Org. 177 (1985); Benjamin Klein & Keith B. Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 J. Pol. Econ. 615 (1981); L.G. Telser, *A Theory of Self-Enforcing Agreements*, 53 J. Bus. 27 (1980).

degrades the operation of informal contracting, or complements that may mutually reinforce each strategy's effectiveness.²² Here the literature is largely focused on reciprocity-based informal contracting, as opposed to relational contracting based on the expectation of future dealings.²³ What is broadly lacking in this literature, however, is a theory of when and why the two modes of enforcement are likely to be rivalrous and when parties can make use of both techniques to structure their arrangement. We provide a first step toward developing a theory of the complementary interaction of formal and informal contracting in Part II below. In this Part, we set the groundwork for the effort by examining in Part IA the limitations of both formal and informal enforcement as uncertainty increases; limitations that we then show in Part IB explain the reasons for their mutual exclusivity.

A. Formal and Informal Enforcement and their Limits.²⁴

1. Formal Enforcement and the Verifiability Problem.

The capacity to compel disclosure of private information is the defining feature of formal, in contrast to informal, enforcement.²⁵ When formalized contractual exchanges break down due to the opacity of the interactions or the guile of one or more of the parties, courts (or arbitrators)²⁶ can serve a valuable function by unpacking complex behavior and assessing responsibility. Thus, they can detect a breach if there has been one, but also forestall disproportionate responses by an aggrieved party. To do this, courts must have better, or more precisely, more reliable information than was jointly available to the parties. But of course a judge, unlike, say, a basketball referee, cannot directly observe complex interactions on the field

²² See sources cited in note – *infra*.

²³ See generally, Martin Dufwenberg & Georg Kirchsteiger, *A Theory of Sequential Reciprocity*, 47 *Games & Econ. Behav.* 268 (2004); Ernst Fehr et al, *Reciprocity as a Contract Enforcement Device*, 65 *Econometrica* 833 (1997); Ernst Fehr & Klaus M. Schmidt, *A Theory of Fairness, Competition and Cooperation*, 114 *Q. J. Econ.* 817 (1999); David K. Levine, *Modeling Altruism and Spitefulness in Experiments*, 1 *Rev. Econ. Dynamics* 593 (1998); Mathew Rabin, *Incorporating Fairness into Game Theory and Economics*, 83 *Am. Econ. Rev.* 1281 (1993).

²⁴ The discussion in this part draws on SCOTT AND STEPHAN, *supra* note – at 84 -109.

²⁵ See TAN __ *infra*.

²⁶ Arbitration remains a formal enforcement strategy. While arbitration displaces some of the legal rules associated with litigation, it still requires the intervention of the state to enforce the arbitration award.

of play and then declare fouls.²⁷ A legal referee must obtain information indirectly, from the very parties who dispute the facts of their “play.” This requires that the court have the power to impose sanctions in order to extract essential information known only to the disputants themselves. Once the parties offer evidence, the court can then *verify* information each party may lack individually. But without a judicial sanction for non-production, and for misleading production favorable to a party’s own position, no party would have an incentive to provide the truthful information that might harm his position. And without that information, the advantage of formal enforcement disappears: absent the court’s power to sanction, a contracting party would be motivated to conceal evidence of any defection known only to it and the court would lack the ability to secure information even as good as the parties themselves possess.

But the power to compel disclosure is limited. An unlimited power to compel disclosure of all information potentially relevant to the resolution of a contractual dispute would impose intolerably costly burdens on the very parties who would invoke the court’s jurisdiction. In practice, therefore, the expense of formal verification limits its use, and parties to formal contracts routinely aim to structure their relations to economize on the expected verification costs (to them). Their strategies for doing so are a central theme in contemporary contracts scholarship.²⁸

Typically, these economizing strategies turn on the balance in contract design between broad standards of performance and precise, bright line rules specifying exactly the action the party must take. All else equal, it is harder, and therefore more costly, to verify application of a broad standard than application of a more precise contract term or rule. This is because in verifying a standard, the court first must determine an operative “proxy” against which to measure a party’s performance: What observable (range of) outcomes should count in determining whether (a range of) unobservable behavior would be “reasonable?” The evidentiary proxies a court selects in applying a standard inevitably will be a noisier signal of a party’s performance than either the

²⁷ For example, consider the spreading use of “instant replay” to supplement referees’ information.

²⁸ See Robert E. Scott & George G. Triantis, *Anticipating Litigation in Contract Design*, 115 Yale L. J. 814 (2006).

parties' direct observation of their actual actions or a judicial determination of the conformity of an act to a rule specifying an action.²⁹

In general, therefore, contractual standards are more costly to verify than precise terms or rules because proxies must be selected and because whichever proxies are selected will differ from the unobservable conduct for which the proxies substitute. But standards often have distinct utility. Because courts give content to standards only after the relevant future events have come to pass, they permit the parties to harness the advantage of hindsight: the passage of time gives the court more information than the parties had at the time they drafted their contract. Thus, by trading off the informational advantage of standards (net of their difficulty of verification and the variability of the proxy chosen to measure performance with the standard) against the fact that compliance with rules is more easily verifiable, contracting parties can sometimes write more complete contracts and thus can enhance their incentives to make jointly beneficial investments. This makes possible a greater range of socially beneficial joint production³⁰ and explains why formal contracts are widely used in transactional settings where outcomes are verifiable even though the parties' actual behavior is observable with difficulty, if at all.³¹

²⁹ *Id.* To illustrate this point, assume the parties wish to pair particular future contingencies to corresponding performance obligations, *i.e.*, when X occurs, the promisor must pay \$Y. The parties can define X in several different ways. X may be a rule, *i.e.*, a relatively specific fact, such as the delivery of a widget with a specified weight. Here the parties delegate to the court only the determination of what evidence is sufficient to satisfy X and trigger the promisor's payment obligation. Alternatively, X can be a standard, such as the delivery of a widget in excellent condition. Here the court must determine not only what evidence is sufficient to establish the weight of the widget, but also the degree to which weight is relevant to the determination of whether the widget satisfies the standard. Scott & Triantis, *supra* note – at 826.

³⁰ Given these tradeoffs, parties who rely on formal enforcement face a fundamental choice. If conditions are unlikely to change much in the future (the level of uncertainty is low), and thus the *ex ante* cost of writing contract rules is low relative to the anticipated gains, the parties' most cost effective strategy is to write a complex, rules-based contingent contract. Such a contract will contain precise terms-- rules that pair particular contingencies with an appropriate contractual performance: if X occurs a party will take Y action. Assuming that the parties to such a contract can forestall (or otherwise control) renegotiation, they will have an incentive to make jointly beneficial investments (in the jargon of economics, the contingencies and their respective performance obligations are "contractible"). These complex contracts are well suited to formal enforcement because information concerning performance will be both observable and verifiable to the court at relatively low cost.

³¹ Courts do not, however, always accept the parties' invitation to devise proxies for high-level standards. Where the standard is so devoid of substance that the court has no basis for choosing among conflicting proxies, it may simply apply the standard quite narrowly, and thereby advise parties contracting in that circumstance that it needs more detailed guidance. See note __ *infra*.

Formal enforcement can break down, however, where the optimal actions for each party depend on the future state that materializes, but the future is uncertain, and it is therefore prohibitively costly or impossible to specify most future states, let alone the appropriate action that is to be taken if they occur. Under these conditions, parties relying on formal enforcement are confronted with two choices: the Scylla of “hard” terms (precise rules) and the Charybdis of “soft” terms (vague standards). Rule-based contracts will require renegotiation after the uncertainty is resolved, because their *ex ante* allocation of rights—including rights to the re-allocation of control rights—will frequently turn out to be wrong *ex post*. This will allow the party favored by fate to renegotiate from strength, and thus undermine incentives to invest. Similarly, the costs of verifying standard-based contracts and the corresponding risk both of the court choosing the wrong proxy and even the best proxy’s inadequacy increase rapidly under uncertainty, and so deter investment as well.³² To be sure, parties writing more complex contracts can ameliorate this problem by using combinations of standards and rules, but high contracting costs can make this strategy infeasible, and ever more so as uncertainty increases.³³

2. *Informal Enforcement and the Observability Problem.*

Where formal enforcement depends on court verification, informal enforcement depends entirely on private behavior—one party’s ability to observe directly the other’s actions, and the capacity to sanction misbehavior directly when it is observed. For example, parties to an agreement often can observe whether one of them has exercised “best efforts” to perform its

³² To elaborate the point in text, parties can write simple contracts with hard terms that lump together many future states of the world and provide for the same obligations across the different states. But where the level of uncertainty is high, a simple contract containing only hard terms will likely be sub-optimal *ex post*. This is so because the contract specifies the same obligation for many different possible contingencies that ideally would require different obligations if the states could be anticipated and matched with appropriate actions. Alternatively, parties may respond to this high level of uncertainty by writing a contract that contains many vague standards that delegate to courts the task of finding proxies for the relevant contingencies and their respective performances. As discussed above, soft-term contracts take advantage of a court’s ability to assess the respective contract performances after all uncertainties have been resolved. But the costs of writing soft-term contracts are severe verification problems. Unless there are objective proxies for the performances in question, simple contracts with soft terms raise the moral hazard risk that the promisor will always choose the performance proxy that is the least costly for him even where an alternative proxy under the same broad standard would be jointly profitable. For discussion, see Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 Yale L. J. 541, 601–05 (2003).

³³ Scott & Triantis, *Anticipating Litigation*, *supra* note – at 851-56.

obligation and can punish a slacker, even though it would be quite costly to marshal the evidence necessary to convince a court to impose an equivalent punishment. The non-state sanctions that make informal enforcement effective are generally thought to be of three types. These are mutually supportive at low to intermediate levels of uncertainty, increasing the actors' capacity to enforce contracts where behavior is directly observable to them, while outcomes are hard to verify. But as we will see, informal enforcement also breaks down at high levels of uncertainty, making it no substitute for formal enforcement when the actors are in significant ways ignorant of the future they intend to create. Put differently, collaborative innovation confronts the barrier that both familiar contracting strategies break down in just the circumstance that defines the environment of innovation.

One type of informal enforcement is the threat that one party to an informal contract will respond to its counterparty's breach by reducing or terminating future dealings. This tit-for-tat strategy imposes losses on the defector which, in prospect, create disincentives to breach in the first place.³⁴ Even where the particular parties do not expect to deal with each other in the future, the tit-for-tat informal enforcement structure will still work if one party will trade with others in the future -- that is, if trade will be multilateral rather than bilateral -- so long as the repeat play party's reputation, the collective experience of parties who have previously dealt with a person or firm, becomes known to future counterparties. The action of future counterparties then serves to discipline the misbehaving party.³⁵

A second type of informal enforcement is normative or dispositional, supported either by the morality or tastes of the contracting parties rather than calculations of individual gain. Substantial experimental evidence shows that approximately half of the subjects do not behave opportunistically even when it is in their economic interest to do so and they are not under threat of punishment or retaliation.³⁶ Similarly, experimental evidence also indicates a widespread, but

³⁴ See generally, ROBERT AXELROD, *THE EVOLUTION OF COOPERATION* 27–54 (1984) (explaining success of “tit-for-tat” strategy—e.g., matching the cooperate/defect decision made by one’s opponent in the previous round—in multi-round prisoner dilemma “tournaments”).

³⁵ See note – infra and sources cited therein.

³⁶ See, e.g., Matthew Rabin, *Incorporating Fairness into Game Theory and Economics*, 83 *Am. Econ. Rev.* 1281 (1993); David K. Levine, *Modeling Altruism and Spitefulness in Experiments*, 1 *Rev. Econ. Dynam.* 593

not universal, taste for reciprocity-- an inclination to reward cooperators and punish opportunists even when the subjects derive no direct and particular benefits from doing so.³⁷ Like character, a preference for reciprocity provides one explanation for how (and why) this informal sanctioning works. Absent a taste for reciprocity, it may be irrational for individuals to absorb the costs of shaming, boycotting, and ostracizing.

Third, normative or dispositional informal sanctions can operate at the level of social groups rather than among individuals. In compact and homogenous communities, for instance, the community as a whole can sanction the breach of one member's obligation to another by ostracizing the malefactor, cutting off not just business ties but all the benefits of belonging to the group.³⁸

The different supports for informal contracting generally complement each other, at least as the uncertainty—and with it the complexity—of transactions increases from low to moderate levels. But informal enforcement depends on clear observation of counterparty's actions.³⁹ the

(1998); Ernst Fehr & Klaus Schmidt, *A Theory of Fairness, Competition and Cooperation*, 114 Q. J. Econ. 817 (1999); Ernst Fehr, Simon Gächter, & Georg Kirchsteiger, *Reciprocity as a Contract Enforcement Device: Experimental Evidence*, 65 *Econometrica* 833 (1997). For a review of the literature, see Ernst Fehr & Klaus Schmidt, *Theories of Fairness and Reciprocity: Evidence and Economic Applications*, University of Zurich, Institute for Empirical Research in Economics, Working Paper No. 75, at 2-3 (2001).

³⁷ The experimental evidence on individuals' propensity to reciprocate yields two key findings. First, many people respond cooperatively to generous acts and, conversely, punish non-cooperative behavior. Second, the observed preference for reciprocity is heterogeneous. Some people exhibit reciprocal behavior and others are selfish. Taking all the experiments together, the fraction of reciprocally fair subjects ranges from 40 to 60% as does the fraction of subjects who are selfish. For discussion, see Ernst Fehr et al., *Reciprocity as a Contract Enforcement Device: Experimental Evidence*, 65 *Econometrica* 833, 850 (1997) (finding roughly half of subjects punishing shirkers, and roughly half rewarding non-shirkers); Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, 14 *J. Econ. Persp.* at 159, 162 (2000) ("Many studies have carried out detailed analyses of individual decisions and found that the fraction of subjects exhibiting reciprocal choices is between forty and sixty-six percent."); Mathew Rabin, *Incorporating Fairness into Game Theory and Economics*, 83 *Am. Econ. Rev.* 1281, 1283 (1993) (describing experiment showing contribution rate at forty to sixty percent of socially optimal level in one-shot public-goods-decision games). For applications of this experimental evidence to contract theory, see SCOTT & STEPHAN, *THE LIMITS OF LEVIATHAN*, supra note -- at 88-94, 122-27; and Scott, *Indefinite Agreements*, supra note -- at 1661-75.

³⁸ See sources cited in note 39 infra.

³⁹ As a familiar example of the point in text, reputational sanctions work well when other parties can conveniently observe which of the parties in a dispute was responsible for the breakdown in cooperation (which in turn requires a shared expectation of what constitutes performance), and are able effectively to disseminate this information to others. The prospect of a withdrawal of future beneficial relations disciplines a party who otherwise is inclined to shirk. For discussion, see JANET TAI LANDA, *TRUST, ETHNICITY, AND IDENTITY: BEYOND THE NEW INSTITUTIONAL*

simpler a party's action, the easier it is for the counterparty to observe and characterize. Thus, increasing complexity interferes with all types of informal enforcement. The probability of a mistake in playing tit-for-tat increases with the difficulty of assessing a counterparty's actions. And, by the same token, the capacity to assess whether one's counterparty has a taste for reciprocity, or is of a character to forgo opportunism, or is observing community norms also degrades in a complex environment: the match between a party's actual behavior and her character becomes more difficult to assess.

In a mistake-prone, or, as it is referred to in the game theory literature, "noisy" tit-for-tat environment,⁴⁰ misreading a counterparty's actions as opportunistic first leads to retaliation, which in turn leads to responsive retaliation and a cycle of opportunistic behavior that continues until another mistake resets the cooperative equilibrium. In such a setting, tit-for-tat is no longer the most effective strategy because it risks triggering a retaliatory cycle. The dominant strategy is more forgiving: it allows some percentage of the other party's defections to go unpunished.⁴¹ This is where the complementarity of the supports for informal contracting becomes relevant. A significant probability that a counterparty has a taste for reciprocity, or that a counterparty's character dictates forgoing opportunism, makes it less threatening to be more forgiving of an apparent defection than it would be in the absence of an independent reason to trust the counterparty and a corresponding probability that the apparent defection was really a misunderstanding.

ECONOMICS OF ETHNIC TRADING NETWORKS, CONTRACT LAW, AND GIFT EXCHANGE 112 (2001); Barak D. Richman, *Firms, Courts, and Reputation Mechanisms: Toward a Positive Theory of Private Contracting*, 104 Colum L. Rev. 2328 (2004); Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code=s Search for Immanent Business Norms*, 144 U. PA. L. REV. 1765 (1996); Lan Cao, *Looking at Communities and Markets*, 74 Notre Dame L. Rev. 841 (1999); Avner Greif, *Reputation and Coalitions in Medieval Trade: Evidence on the Magrebi Traders*, 49 J. Econ. Hist. 857 (1989); Eric A Posner, *The Regulation of Groups: The Influence of Legal and Nonlegal Sanctions on Collective Action*, 63 U. Chi. L. Rev. 133 (1996).

⁴⁰ Noise is defined as "discrepancies between intended and actual outcomes for an interaction partner due to unintended errors," Pam Van Lange, J.W. Ouwerkerk & M.A. Tazelaar, *How to Overcome Detrimental Effects of Noise in Social Interactions: The Benefits of Generosity*, 82 J. Pers. Soc. Psych. 768, ___ (2002).

⁴¹ The literature is well-developed and uncontroversial: generous tit-for-tat strategies outperform simple tit-for-tat strategies in noisy environments. *See e.g.*, Van Lange et. al., *supra* note --; M. Nowack & K. Sigmund, *Tit for Tat in Heterogeneous Populations*, 364 Nature 56-58 (1992); H.C.J. Godfray, *The Evolution of Forgiveness*, 255 Nature 206 (1992); J. Bendor, R.M. Kramer, & S. Stout, *When in Doubt ...: Cooperation in a Noisy Prisoner's Dilemma*, 35 J. Conflict Res. 691 (1991); Robert Axelrod & D. Dion, *The Further Evolution of Cooperation*, 242 Science 1385 (1988).

Moreover, just as the normative or dispositional modes of informal enforcement can support tit-for-tat calculations of the value of ongoing relations when counterparty's actual behavior becomes less observable, so, too, the existence of ongoing relations can increase the effectiveness of normative enforcement. The presence of an ongoing relationship that allows for retaliation in the event of counterparty opportunism makes it less risky for a party to act on the probability that the counterparty values reciprocity or forgoes opportunism. In this sense, the existence of the continuing relationship allows the parties to learn about each other's tastes and character.⁴² The experimental literature supports this analysis. Repeated interactions cause a significant increase in the cooperative behavior of those who are inclined to cooperate in a one-shot, anonymous game.⁴³ Thus, we see a virtuous cycle, in which each of the mechanisms that support informal contracting reinforces the others by making the conduct of the counterparties more observable – less subject to mistaken assessment -- to each other.⁴⁴ Indeed, given the mutually supportive relation among the types of informal enforcement, we can think of them (at least within the domain where they do interact) as aspects of a single informal enforcement mechanism, one rooted in ongoing relations among parties bound by a (normative) disposition to reciprocity.

⁴² Sylvain Chassang makes a similar point: "Distinguishing the availability of information and the ability to interpret it introduces the possibility of learning in an imperfect monitoring context." This learning then allows the relationship to better withstand "shocks" – significant changes in the economic environment that increases the difficulty of assessing counterparty's actions because greater knowledge concerning the counterparty allows a strategy more patient than one that retaliates in response to every perceived opportunistic action. Sylvain Chassang, *Building Routines: Learning, Cooperation and the Dynamics of Incomplete Relational Contracts* (working paper, February, 2009).

⁴³ These experiments have compared the effort levels of subjects given a single, anonymous opportunity to respond to a generous offer with the effort levels in a similar game in which repeated interactions created an additional opportunity to retaliate against selfish behavior. Ults Martin Brown, Armin Falk & Ernst Fehr, *Incomplete Contracts and the Nature of Market Interactions*, Institute for Empirical Research in Economics, University of Zurich, Working Paper No. 38 (2001). *See also* Ernst Fehr & Klaus M. Schmidt, *Theories of Fairness and Reciprocity*, note -- *supra*, at 6-7; Ernst Fehr, Simon Gächter & Georg Kirchsteiger, *Gift Exchange and Reciprocity in Competitive Experimental Markets*, 42 *Eur. Econ. Rev.* 1 (1998); Gary Charness, *Responsibility and Effort in an Experimental Labor Market*, 42 *J. Econ. Behav. & Org.* 375 (2000); Ernst Fehr & Armin Falk, *Wage Rigidity in a Competitive Incomplete Contract Market*, 107 *J. POL. ECON.* 106 (1999); Simon Gächter & Armin Falk, *Reputation or Reciprocity*, Institute for Empirical Research in Economics, University of Zurich, Working Paper No. 19 (1999).

⁴⁴ SCOTT & STEPHAN, *THE LIMITS OF LEVIATHAN*, *supra* note --- at 577-79.

The experimental evidence suggests, moreover, that informal enforcement, when it is effective, is both *cheaper* and *better* than formal enforcement. Informal enforcement is cheaper because a party only needs to expend costs to observe the other's behavior, while formal enforcement requires the parties to expend additional resources (attorneys fees, court costs, etc.,) in verifying that behavior to a court. Second, less obvious perhaps, is the fact that when informal enforcement works, it is also better. It permits parties to make credible promises regarding observable (and perhaps only observable with repetition) but non-verifiable measures of performance, thus allowing parties to avoid the risk of opportunism arising from formal enforcement of a precise rule or the moral hazard associated with the ex post application of a broad standard.⁴⁵ These advantages explain why, in commercial contracting, parties often rely on informal enforcement even when formal sanctions are available.⁴⁶

Even assuming, however, that these mechanisms of informal enforcement can operate among firms as opposed to among the independent individuals who are the subjects of the experiments reported in the literature,⁴⁷ they are subject to inherent limitations. Informal

⁴⁵ Indeed, the experimental evidence indicates that it can pay to write agreements based on observable but non-verifiable conduct even where the promisee is uncertain whether the promisor is a fair or selfish type. If the population is heterogeneous (*i.e.*, there is a significant fraction of parties with a taste for reciprocity in the population), informal enforcement yields better outcomes in experimental settings *on average* than does the alternative of formal enforcement. This result occurs because even selfish parties will respond reciprocally to an offer to enter into a trust contract where there is the positive probability that the counterparty will behave fairly. Theorists of cultural evolution also have adduced persuasive reasons why cultures generate norms of reciprocity. These norms are part of a process that selects for cooperative behaviors that favor particular groups or tribes over others. For a discussion of this literature and its implications, see Peter J. Richerson, Robert T. Boyd & Joseph Henrich, *Cultural Evolution of Human Cooperation* in GENETIC AND CULTURAL EVOLUTION OF COOPERATION 357 (2003). The existence of persistent differences among groups and conformity within groups thus supports the hypothesis that groups with more cooperative norms are more likely to prevail in group conflict, and thus that evolutionary pressures will lead to the selection of their norms. Ernst Fehr & Urs Fischbacher, *Social Norms and Human Cooperation*, in 8 TRENDS IN COGNITIVE SCIENCE 185, 189 (2004).

⁴⁶ This insight was first explored in Macaulay's classic account of how commercial contractual relationships rely on informal enforcement even when the parties previously have entered into to a formal, legally enforceable contract. Macaulay, *supra* note ---.

⁴⁷ The analysis becomes much more complicated when the individual making the decision whether or not to behave opportunistically is an employee acting on behalf of a firm. Then, the relationship between the employee and the firm is superimposed upon the relationship between the contracting parties. An individual employee thus may have two ways in which to behave opportunistically in connection with a particular transaction: she may cheat the counterparty when it is in the firm's interest, and she may cheat the counterparty when, because of the counterparty's retaliation, it is not in the firm's interest, but because of the employee's incentive structure it is in the employee's interest, perhaps because of a system of annual bonuses without reference to future periods when the retaliation against the firm will take place. Thus, David Kreps's classic characterization of a firm as a long-lived repository of reputation to allow it to use informal contracting, David Kreps, *Corporate Culture and Economic*

contracting, even that supported by taste and character, works best with repeat play in the narrowest sense: the same actors doing the same things with each other again and again, makes conduct more observable, an indispensable element of informal contracting. The more actors undertake novel things with strangers—precisely the conditions of collaborative innovation we analyze here—the greater their chances either of mischaracterizing each other’s acts and intentions, or of finding themselves incapable of characterizing what the others are doing at all. This is an especially alarming prospect given the absence of any formal contractual protection. When the transparency necessary for informal contracting is dissipated by changing sequences of novel performances among unfamiliar actors, the vicious cycles of mistake, retaliation and counter response are no longer interrupted by a switch to forgiving strategies, as they are at lower levels of uncertainty.⁴⁸ Instead, retaliations escalate and destroy the relation.⁴⁹

In sum, formal contracting has an advantage where performance is verifiable ex post but not necessarily observable ex ante. Informal contracting has an advantage where performance is observable but costly to verify. But both can break down in the highly uncertain environments that are the domain of innovation. Might contract planners be able to address such circumstances by combining the two strategies in a fashion that is more effective than either standing alone? Before we see how they can, we look at theoretical and experimental considerations that suggest that they can’t.

Theory, in PERSPECTIVES ON POSITIVE POLITICAL THEORY 90 (James E. Alt & Kenneth A. Shepsle, eds., 1990), requires that there be an internal corporate incentive system that aligns the interest of the individual employee’s incentive with those of the firm. Ronald J. Gilson, *Controlling Family Shareholders in Developing Countries: Anchoring Relational Exchange*, 60 Stan. L. Rev. 633, 640-41 (2007). For an example of how the “nenko” system of lock step employee promotion supports relationally based exchange among Japanese corporations, see Ronald J. Gilson, *Value Creation by Business Lawyers: Legal Skills and Asset Pricing*, 94 Yale L.J. 249 __ (1984).

⁴⁸ See TAN __ infra.

⁴⁹ Robert E. Scott & Paul B. Stephan, *Self-Enforcing International Agreements and the Limits of Coercion*, 2004 WIS. L. REV. 551, 568.

B. Complements or Substitutes? Explaining the Rivalry between Formal and Informal Enforcement.

The preceding discussion suggests that contracting parties should be motivated to capture the benefits of both formal and informal enforcement by relying on formal enforcement to solve complex problems with noisy interactions and on informal mechanisms (whether grounded in reputation, repeated interactions or reciprocity) to enforce contingencies that are difficult to verify but clear enough to be observable. The success of such a strategy turns ultimately on whether formal and informal enforcement mechanisms can be complements, and therefore a mixed strategy is feasible, or whether they are substitutes in that recourse to formal contracting and enforcement degrades -- “crowds out” – the operation of informal contracting and enforcement. Here the existing theory and evidence offer limited guidance. Experimental research has demonstrated that, in many instances, informal mechanisms operate as substitutes for formal enforcement.⁵⁰ But the fact that formal and informal means of enforcing private contracts are *potentially* rivalrous does not mean that a mixed strategy of contract enforcement is necessarily an inferior or impossible strategy. Predicting when the crowding out effect dominates complementarity requires an understanding of the mechanism through which formal enforcement degrades the operation of informal contracting.⁵¹

But how, then, do formal legal obligations to abide by the terms of a contract interact with compliance based on trust and reciprocity? Consistent with our analysis that the mechanisms that support informal contracting operate by making counterparties’ actions more observable, here we argue that the crowding out effect results when the presence of a formal contract and the potential for high-powered legal sanctions *degrade* the information about the nature of the counterparties and the nature of their interactions.⁵² In other words, we see crowding out when formal contracting makes the parties’ actions and performance less

⁵⁰See sources cited in note ---*infra*.

⁵¹ Scott & Stephan, note --- *supra*, at 579-80.

⁵² The distinction between high powered legal sanctions that drive out informal enforcement and low powered sanctions that, we argue below, do not result in crowding out is critical to our theory of how braiding works. High powered enforcement consists in the imposition of standard breach of contract remedies for a failure to perform specified contractual obligations. High powered enforcement, then, is tied to outcome variables and provides incentives that induce parties to take specified substantive actions designed to maximize expected surplus..

observable. This occurs, we suggest, because of the effects of two interrelated factors: a) formal enforcement changes the way a party *perceives* the observed behavior of the counterparty and b) formal enforcement reduces the frequency, and thereby the number of observations, of the very behavior that signals an intention to cooperate.

First, consider the effects of introducing a legal sanction for breach of a performance obligation on how the participants perceive the nature of their interaction. Here there is evidence that the parties' behavior will change depending on whether they understand their interaction as norm-based or as exchange based. The most familiar example is the experiment of using formal sanctions to cause parents to be timely in picking up their children from nursery school. In an effort to improve punctuality, a fine was imposed to encourage compliance. But rather than increasing compliance, imposing a fine caused late pickups to increase. The formal fine "crowded out" the reputation-based norm by changing the parents' perception of their obligation from a commitment to the community to a price for additional day care.⁵³

The experimental literature finds similar results in more commercial settings.⁵⁴ Studies indicate that when offered a contract whose performance is based only on trust, a substantial number of individuals will both pay higher prices and extend higher levels of effort than narrow self-interest would dictate. But when offered the same choices *plus* the possibility of having a third party impose a monetary sanction if the promisor fails to perform as promised, the average price offered and the average effort given declines significantly. The introduction of the formal enforcement option causes shirking to increase and trust -- either in the form of generous offers and/or reciprocating responses -- vanishes almost completely.⁵⁵ In effect, the introduction of a

⁵³ Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 J. Legal Stud. 1 (2000). An extensive literature in social psychology also considers the crowding out of intrinsic motivations. See Edward L. Deci, R. Koestner & Richard M. Ryan, *A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivations*, 125 Psych. Bull. 627 (1999).

⁵⁴ See e.g., Iris Bohnet, Bruno S. Frey & Steffen Huck, *More Order with Less Law: On Contract Enforcement, Trust and Crowding*, 95 Am. Pol. Sci. Rev. 131 (2001).

⁵⁵ Ernst Fehr & Simon Gächter, *Do Incentive Contracts Crowd Out Voluntary Cooperation?* University of Zurich, Institute for Empirical Research in Economics, Working Paper No. 34, Apr. 2002) available at <http://ssrn.com/abstract=313028>. A similar result is reported by Daniel Houser, Erte Xiao, Kevin McCabe, & Vernon Smith, *When Punishment Fails: Research on Sanctions, Intentions and Non-Cooperation*, 62 Games & Econ. Behav. 509 (2008).

formal sanction that governs all of the parties' actions under the contract results in a "cognitive shift that crowds out norm-based social behavior and increases the likelihood of income maximizing behavior."⁵⁶

Moreover, in cases where the inclusion of explicit, formal penalties changes the parties' perception of their interaction, the change in the game also may be perceived as a signal of the taste or character of the party who proposed the formal penalty. A party may interpret the proposing party's willingness to expend resources to create a threat of significant damages for failure to perform the formal contract as a signal that the counterparty is less likely to be a reciprocator. The same uncertainty concerning the counterparty's character does not exist where the sanction is low-powered (say, terminating the relationship) and is imposed *ex post* and only after defection has been observed. In that sense, *ex post* punishment is less intrusive than is the *ex ante* announcement of large damages for breach of any of the contract's many obligations.⁵⁷ In the latter case, the information signaled by the proffered contract terms serves to generate a separating equilibrium that drives out informal contracting. Once a counterparty's character becomes less observable and (correctly or not) the party is identified as potentially opportunistic, only fully formal contacts will be chosen.

A second factor contributing to the crowding out phenomenon is the impact of formal legal sanctions on the incidence of the behavior that supports informal contracting. A careful analysis of the nature of reciprocal behavior and the constraints of formal sanctions shows that when formal rules and associated sanctions occupy a relationship's entire domain—that is, when the sanctions are tied to outcome variables-- the "high powered" formal enforcement suppresses the production of information that supports reciprocity. Formal enforcement of contract terms is typically high powered: notwithstanding the many contract terms imposing performance duties on both parties, outcome variables are verified under a "breacher-status" rule: there is only one breacher and the breacher not only suffers the predetermined damages sanction but also

⁵⁶ Houser et al, supra note—at---

⁵⁷ Scott & Stephan, note --- supra at 580.

sacrifices any benefits that otherwise have accrued under the contract.⁵⁸ In a sense, high powered legal enforcement that is designed to create efficient contractual incentives to maximize expected surplus functions as a “first strike” nuclear weapon in which the nonbreacher captures all of the contract gains and the breacher suffers all of the losses.⁵⁹ For example, a request for an adjustment of contractual duties by a promisor subsequently may be found to justify the promisee’s declaring an anticipatory repudiation of the contract, thereby placing the promisor in breach. This “breacher-status” problem means each party continually faces the risk that a single misstep can transform a surplus-generating cooperative enterprise into a zero sum game.⁶⁰ This threat, in turn, deters actions—such as requests for mid course adjustment of the contract-- that invite a counterparty to reciprocate proportionally and informally. Actions that provide the counterparty the opportunity to reciprocate (or not) are simply too risky – if one guesses wrong about the counterparty’s tastes or type an extraordinary penalty may be imposed. In short, high powered penalties dramatically raise the stakes associated with observability-based informal contracting, leaving the parties to rely on verifiable formal rules.

⁵⁸ Two mandatory rules of contract law contribute to the conditions that typically impose high powered sanctions for breach of a formally enforceable contract. First, parties are constrained by unconscionability and related process doctrines from setting damages “too low.” *See e.g.*, UCC § 2-718, Comment 1 (unreasonably small stipulated damages “might be stricken under the section on unconscionable contracts.”). Second, proportional responses to non-performance are impeded by the “breacher-status” rule: there is only one breacher and the breacher is not only liable for compensatory damages but, in addition, also loses “an accrued interest in what may be extremely valuable return rights.” Charles J. Goetz & Robert E. Scott, *The Mitigation Principle: Toward a General Theory of Contractual Obligation*, 69 Va. L. Rev. 967, 983 (1983).

⁵⁹ Scott, *Conflict and Cooperation*, supra note – at 2042-44.

⁶⁰ In addition to the notion that only one party can breach and that material breach results in compensatory damages as well as loss of accrued contract rights, rules governing insecurity and anticipatory breach permit one party to threaten these consequences whenever the other discloses anticipated difficulties in performance. In addition, the mitigation doctrine only operates once a party forfeits all rights by breaching. Until there is a breach, the counterparty can ignore requests for adjustments that might reduce the consequences of non-performance. The threat of the ultimate sanction thus deters parties from voluntarily revealing the information needed for the counterparty to adjust informally. Goetz & Scott, *The Mitigation Principle*, supra note --- at 1011 – 1018.

II. BRAIDING IN PRACTICE: A PROTOTYPICAL EXAMPLE AND WHY THIS SOLUTION OUTPERFORMS ALTERNATIVES

A. Using Formal Enforcement to Support the Evolution of Informal Contracting

In the previous Part, we saw that informal contracting is supported by mechanisms that operate to make observable actions that reveal both compliance and counterparty traits. But we also saw that these mechanisms fail when those actions are obscured by a noisy environment or by the introduction of high-powered formal enforcement. This is particularly the case when the object of the contractual relationship is highly innovative, so neither informal contracting nor formal contracting alone encourages the necessary relationship specific investments. The endogenous uncertainty of the ultimate goal of such a contract renders the parties' performance both difficult to observe and therefore unsuitable for informal contracting, and difficult to verify and therefore unsuitable for formal contracting.

This is the realm of “braiding,” where, we argue, formal contracting establishes processes that make behavior observable enough to support informal contracting over the substance of the innovation.⁶¹ Braiding uses *formal* contracts to create governance processes which support iterative joint effort and low-powered enforcement techniques that only protect the commitment to collaborate, but don't control the course or the outcome of the collaboration. This formal mechanism has two closely linked components. The first is a commitment to an ongoing mutual exchange of information designed to determine if a project is feasible, and, if so, how best to implement the parties' joint objectives. The second mechanism is a procedure for resolving disputes arising from the first. Its key feature -- what we have called the “contract referee mechanism”⁶² -- is a requirement that the collaborators reach unanimous (or near unanimous) agreement on crucial decisions, with persistent disagreement resolved (or not) by unanimous agreement at higher levels of management from each firm. Requiring unanimity for project decisions makes it easy for reasonable skeptics to require more information from enthusiasts;

⁶¹ Gilson, Sabel & Scott, *supra* note __ at 476-89.

⁶² *Id.* at 479-81.

bumping disagreements up to impatient superiors discourages obstinacy. Together these two mechanisms render observable, and forestall misunderstandings about, the character traits and substantive capabilities that support the *informal* contracting upon which the parties rely as, working under uncertainty, they encounter unanticipated problems that can only be solved jointly. At the same time, the parties' increasing knowledge of their counterparty's capacities and problem-solving type, a direct result of the processes specified in the formal contract, creates switching costs – the costs to each party of replacing its counterparty with another -- that constrain subsequent opportunistic behavior.

As we have noted, the experimental literature, and contemporary contracts scholarship more generally, ignore this possibility because of two, closely related assumptions. First, they assume that the level of trust—here, confidence in a partner's reliability, based on some combination of shared norms and the mutual observability of behavior—is an endowment of the actors, exogenous to the relation between them.⁶³ Second, they assume that introducing formal elements to this informal relation will crowd trust out, either by inducing actors to make decisions based on (formal) incentives, rather than norms of reciprocity, or by causing them (again in response to formal incentives) to act in ways that make their behavior more opaque to the counterparty.⁶⁴

In the real world of commercial contracting, in contrast, we observe that parties today often treat trust as endogenous, as an object of contracting rather than as a precondition. They write contracts in which they manifestly intend to establish a deeply collaborative relation, where little or none existed before, through a combination of formal and informal elements.⁶⁵

⁶³ See TAN *supra*.

⁶⁴ See TAN *supra*.

⁶⁵ A non-exhaustive and non-random sample of collaborative contracts that combine formal and informal elements can be found at onecle.com, <http://www.onecle.com>, and the Contracting and Organizations Research Institute, <http://cori.missouri.edu>. See e.g., Data Management Outsourcing Agreement Between Allstate Insurance Company and Axiom Corporation (March 19, 1999) (contract for Axiom to develop a data acquisition system to support Allstate's underwriting of new business in auto and property insurance); Agreement between Phoenix Technologies Ltd. and Intel Corporation (December 1995) (supply contract for Phoenix to be a principal supplier of system-level software to Intel); General Terms Agreement between the Boeing Company and Spirit Aerosystems Inc. (June 30, 2006) (general terms agreement covering purchase orders by Boeing for particular product to be supplied by Spirit); Component Supply Agreement between American Axle & Manufacturing, Inc. and General Motors Corporation

Moreover, rather than writing high-powered formal contracts that tie incentives to outcome variables, these parties write formal contracts to motivate low-powered incentives to collaborate. In short, they braid formal and informal elements in ways that enhance the collaborative process, reducing the risk of opportunism and motivating the iterative exchange of private information. In the next section, we look in detail at one such counter-theoretic contract.

1. A Prototype: The Collaboration and License Agreement between Pharmacopeia, Inc. and Bristol-Myers Squibb Co.

The pharmaceutical collaboration and licensing agreement between a “small pharma,” Pharmacopeia (Pharma), and a “big pharma,” Bristol-Meyers Squibb (BMS) illustrates the essentials of braiding.⁶⁶ We take this agreement to be prototypical, not representative, of contracts of its type: Its elements are not those most frequently to be found in an empirical survey of contracts with some features of braiding actually used in practice. Rather, the agreement contains the essential features that, in creating complementarities between formal and informal contracting, define the category. In this sense, the Pharma/BMS agreement is a prototype or central exemplar of a distinct class of contracts, in the way that robins and swallows are prototypes of birds, while chickens, ostriches and penguins, despite their many similarities to robins and swallows, are not.⁶⁷

(June 5, 1998) (requirements contract for motor vehicle components to be supplied by AAM to GMM); Development Agreement between Nanosys, Inc. and Matsushita Electric Works, Ltd. (Nov. 18, 2002) (collaboration agreement to develop photovoltaic devices with nano components in Asia); Fountain Manufacturing Agreement between Apple Computer, Inc. and SCI Systems, Inc (May 31, 1996) (a contract manufacturing agreement for SCI to produce designated products at the Fountain, Colo., plant); Research, Development and License Agreement between Warner-Lambert Company and Ligand Pharmaceuticals Inc. (Sept. 1, 1999) (pharmaceutical research and development collaboration between “big pharma” and “little pharma”); Long Term Agreement between John Deere & Company and Stanadyne Corporation (5 year supply contract for the purchase of fuel filtration systems, injection nozzles and related products by Deere from Stanadyne).; Airbus A320 Purchase Agreement between AVSA S.A.R.L. and New Air Corporation (April 30, 1999)) (JetBlue and Airbus purchasing agreement). See also examples of collaborative contracts cited in George S. Geis, *The Space Between Markets and Hierarchies*, 95 Va. L. Rev. 98 (2009).

⁶⁶ This contract can be obtained by visiting one of two sources of contracts available on the internet: [onecle.com](http://www.onecle.com), <http://www.onecle.com>, and the Contracting and Organizations Research Institute, <http://cori.missouri.edu>. We are grateful to Victor Goldberg who made substantial contributions to the analysis of the Pharma/BMS contract.

⁶⁷ For other exemplars of contracts that deploy a similar braiding strategy, see note 64 supra.

The Pharma/BMS contract is an agreement to collaborate on procuring compound libraries to increase productivity in the drug discovery industry, coupled with a license to BMS to develop and commercialize therapeutic or prophylactic “products.”⁶⁸ The collaboration calls for the parties to conduct joint research under an annual research plan approved by the Research Steering Committee (RSC), with the goal of identifying one or more library compounds with “activity in the field.”⁶⁹ The collaboration is to proceed interactively, each party using “reasonable efforts” to perform the work under the plan, providing quarterly reports to the RSC, disclosing all inventions, keeping an open research laboratory for the other party to visit and permitting open inspection of all data and research materials.⁷⁰

The annual research plan establishes specific benchmark objectives consistent with the BMS contract funding obligations. Each plan approved by the RSC is to be signed and dated by each representative.⁷¹ The initial term of the research collaboration is three years, with an option to extend the collaboration for an additional two years by mutual agreement.⁷² Either party can terminate for breach or insolvency, and BMS (the financing entity) can terminate if the CEOs cannot resolve a dispute under the contract’s internal dispute resolution mechanism. Termination eliminates BMS funding obligations but BMS must pay a termination fee.⁷³

Article 3 of the contract sets out the internal governance structure under which the collaboration process is monitored and controlled. The RSC consists of three members from each firm. It meets quarterly to review, approve and modify research plans, measuring research progress against benchmarks, and selecting the lead compounds for each target. It requires open

⁶⁸ “Products” are defined as any product incorporating an active compound, i.e., a library compound --either the Pharma library or collaboration library--- with a set concentration of a patented compound and derivatives of these active compounds.

⁶⁹ Clause 2.1.

⁷⁰ Clause 2.7(b).

⁷¹ Clause 2.3.

⁷² Clauses 1.1.6 & 2.4.2.

⁷³ Clauses 2.4.4(d). BMS funds the research plan according to a schedule of research phases at \$X per phase (7.2.1).

information exchange and keeps detailed records of its own activities. Importantly, section 3.4 provides that all decisions of the RSC must be unanimous. If the RSC cannot reach unanimity on any matter, the issue is referred to senior Vice Presidents for each firm. If they disagree, then the decision-making process moves up the respective firms' hierarchy to the two CEO=s. Only if the CEO's fail to resolve the differences can BMS terminate its funding.⁷⁴

As in many pharmaceutical research collaborations, the contract contemplates the commercialization of an eventual product of the collaboration by the funding entity, in this case BMS. In view of this possibility, Pharma grants BMS a world-wide license to make and develop all active and derivative compounds resulting from the research (and Aother compounds@ defined as those arising from the research but not anticipated as one of its original Atargets@), and to make and develop all products containing these compounds.⁷⁵ The license for any particular compound is limited to a term of years unless BMS has achieved certain milestones, including Phase III trials, NDA filing and NDA approval.⁷⁶ BMS is to pay a designated license fee on the effective date of the agreement, and BMS is to pay Pharma a designated royalty on aggregate net sales of the product.⁷⁷ Finally, BMS is to use Acommercially reasonable efforts,@

⁷⁴ We have previously described this procedure as a "contract referee mechanism":

This part of the governance structure typically combines three key elements: (a) the commitment to share and exchange information during the collaboration, (b) the assignment of decision rights to a joint project management team subject to a unanimity rule, and (c) the appointment of "referees"--- representatives from each firm charged with resolving disputes. This mechanism has several effects. First, the referees provide information concerning the nature of a complex interaction that others cannot obtain directly. A referee can clarify misunderstandings early, avoiding false negatives---i.e., the interpretation of the other's behavior as a defection. When she finds that a defection has indeed occurred, a referee can, by "blowing the whistle" while providing for a fast and low-cost resolution to the dispute, forestall disproportionate responses by the aggrieved party.... The referee also serves as an informal disciplining mechanism.... The subordinates' job was to resolve problems, not escalate them.

Gilson, Sabel & Scott, supra note – at 480.

If the CEO's fail to resolve disagreements, ongoing disputes are first subject to Mediation under the AAA rules prior to binding arbitration (3 expert arbitrators with streamlined procedures, all awards final and binding, no limitation or liquidation of damages). Clause 15.13.2.

⁷⁵ Clause 6.1-3.

⁷⁶ NDA filing and NDA approval refer to the New Drug Application and Approval processes of the Food and Drug Administration that are a prerequisite to the marketing of a new drug therapy to the general public.

⁷⁷ Net sales means invoice price of products sold (1.24). The parties agree that royalties are owed regardless of whether the product is covered by a patent since the principal contribution of Pharma is to accelerate the time to market.

comparable to those expended on its own products, to develop and commercialize active compounds.⁷⁸

An important feature of the contract is the series of options granted to each party as the collaboration approaches the end of the research phase. Here, the period for collaboration has a predictable end, and the parties face a division of the surplus created by the collaboration. Once the period of collaboration ends, the potential for opportunism reemerges, but the need for collaboration and the uncertainty of outcome prevent the anticipation of a final period from causing unraveling through backward induction. At this stage, uncertainty is resolved and decision and control rights are contractible—they can thus be assigned by a high powered incentive contract. At the end of the research term, therefore, if BMS either fails to exercise the required diligence or discontinues development of any collaboration products, Pharma has the right to terminate all licenses granted to BMS and to seek an exclusive license to the applicable BMS technology. The parties are obligated to negotiate in good faith the terms of such a license. Thus, the contract gives BMS an initial option to attempt to commercialize the product of the research under the initial license and royalty arrangement. But if BMS either fails to pursue this option diligently or decides to abandon the option, then Pharma has the option to acquire the product at a price to be negotiated in good faith and to market it elsewhere.

2. How the Braided Contract Works

The governance structure just described creates a process that builds consensus, enhances learning, minimizes misunderstanding, and the like. But why is this elaborate governance structure made part of a formal contract? Since this agreement contemplates collaborative research, the initial goals of the contract require collaboration over non-contractible objectives; so instead of specifying objectives, the contract establishes transparency through information exchange, open inspection and mutual learning. The key production function is determined collaboratively: the process of iterated cooperative adjustments leads to consensus, and any

⁷⁸ Each firm owns the rights to intellectual property (IP) developed by their lab individually. Jointly developed IP is owned collectively. (10.1). Each firm undertakes to prosecute patent applications for its own IP and to keep other fully informed, each pays its own out-of-pocket costs.

disagreements are pushed up the firm hierarchy. The Research Plan structure thus depends on co-design and reciprocity. At first blush, therefore, it appears that adaptation and adjustment must be informal. But then the question recurs: if the deal only contemplates the use of informal sanctions to constrain opportunism then what is the function of the formalized governance structure?⁷⁹ To understand why the informal mechanisms are included in the formal contract we look at the role of the nested options and the resulting incentive contract that comes into play at the end of successful collaboration, and then generalize the explanation of their function to account for the formalization of the governance structure.

To grasp the function of the nested options, imagine that neither they, nor any other related terms, existed; that the contract made no provision at all for the end game--the successful pursuit of the collaborative goal. In that case, the better the collaboration went, the more anxiously and furtively the parties would look ahead, each fearing that the other might appropriate all the gains from the joint effort. The most obvious precaution would be to dissemble: conceal work product from the other party to forestall completion of the project, and to hold bargaining chips in case of a precipitous move by the collaborator. Success would thus become self limiting. To avoid this risk, the parties would quickly hit upon the expedient they in fact employ in the contract-- the nested options regulating the sequence and conditions under which the parties can claim the right to commercialize the product. Thus, the braided collaboration is followed by a contractual end game in which parties use options to induce investment in the now realized project. The important lesson of the Pharma/BMS agreement, therefore, is that the two elements—braided collaboration and high powered incentive contracting --can be combined so long as there is a separation between the braided agreement and the incentive-based contract. We can summarize this insight in the language of the discussion so far: a clear distinction between the information exchange and dispute resolution mechanisms that govern the search for a product and the high powered contractual regime that

⁷⁹ To be sure, at the end stage of the contract, after a product is produced, contracting problems are more readily solved by a series of options –giving BMS the right to abandon the project and Pharma the option to pick it up thereafter. At this end stage, therefore, we see a number of terms formally enforceable through high powered sanctions that allocate decision rights over bringing the product to market, pursuing inventions, control of intellectual property and the like. But even there, courts may be called upon to provide “low-powered” enforcement to the good faith obligation to negotiate over license terms of the abandoned option. See TAN *infra*.

governs its commercialization prevents the formal incentives of the latter from crowding out the informal behavior induced by the former.

A simple extension of this backward induction of contract design suggests an explanation for the incorporation of the informal governance mechanism into the formal structure of the agreement. If the parties can imagine success, then they just as well—perhaps even more easily—can imagine failure, and more exactly the possibility of disputes over the progress and promise of the project. In that case the CEO of BMS, the funding entity, will want the unilateral right to withdraw. But she will want to exercise that right only when it is, in fact, in the best interest of her company to do so. To this end, she will insist on a lower-level dispute resolution system that accomplishes two goals: First, the governance mechanism reduces the probability of conflict by making as much as possible of the collaborative behavior observable to the actual collaborators; and second, it reduces the costs of (and the risk of error in resolving) conflicts that nonetheless occur by making as much as possible of the collaborators' behavior verifiable to the reviewing authority. Insisting on this process will have the additional and indispensable benefit of reassuring her counterpart in dispute resolution, the CEO of Pharma, that the system is open and fair. Without this assurance the counterparty would have reason to act strategically in the collaboration, with the aim of reducing vulnerability to the final, unilateral authority of the CEO of BMS.

Thus, proceeding from the desire to collaborate, to the realization that collaboration could fail, to creation of a dispute-resolution system that minimizes the risk of erroneous judgments of failure, the institutional architects back into the governance structure that we observe. And just as the separation of the exploration from the commercialization regimes reduces the risk of crowding out, so does the creation of the information exchange and dispute resolution mechanisms. Notice that this solution combines, within an essentially private system, what had appeared to be the mutually exclusive advantages of verifiability (typically associated with

public, formal enforcement) and observability (typically associated with enforcement by informal means).⁸⁰

To be sure, this is a just-so story. But it provides a plausible explanation of how a solution that probably emerged in practice, incrementally, could then be rationalized post hoc as an integrated system that provides the best possible information to high-level corporate decision makers.

To get another vantage point from which to understanding the operation of braiding mechanisms, in the following discussion we contrast the form of braiding in contracting for innovation, as typified in the BMS Pharma agreement, with an alternative approach to endogenizing the creation of trust that has performed well in other settings, but seems unsuited to the degree of uncertainty increasingly characteristic of commercial contracting.

B. An Alternative to Braiding and its Limits.

To readers familiar with German and Japanese industrial structure—“organized, Rheinland” capitalism,⁸¹ in contrast to the more contractual and fluid Anglo-American variety—the creation of a governance structure to generate an information exchange regime that does not in the end obligate the parties to continue collaborating will seem like a roundabout, even baroque, way of building trust between collaborators. In these economies, an exchange of formal, long-term commitments to collaborate provides a more direct way of braiding formal and informal elements so as to engender trust.⁸² This exchange locks the parties into a continuing relation, so constraining their choices that for each party the best strategy is to work at

⁸⁰ See Lisa Bernstein, *Private Commercial Law in the Cotton Industry: Creating Cooperation Through Rules, Norms, and Institutions*, 99 Mich. L. Rev. 1724, 1745–54, 1762–87 (2001) (discussing existence and importance of institutional dispute-resolution conditions on reputation-based non-legal sanctions in cotton industry).

⁸¹ P. HALL & D. SOSKICE, *VARIETIES OF CAPITALISM* (2001).

⁸² See Wolfgang Streeck, *Co-determination: After Four Decades* in *INTERNATIONAL PERSPECTIVES ON ORGANISATIONAL DEMOCRACY*. *INTERNATIONAL YEARBOOK OF ORGANISATIONAL DEMOCRACY* 391 (1984); and Wolfgang Streeck, *Beneficial Constraints: On the Economic Limits of Rational Voluntarism* in *CONTEMPORARY CAPITALISM: THE EMBEDDEDNESS OF INSTITUTIONS* at 197–219 (1997).

cooperating with the other to make the collaboration succeed. The formal obligations thus induce informal behavior that makes performance observable, reducing the chances of misunderstanding, rendering mistakes more easily corrigible and so raising, endogenously, the level of trust.

The Japanese keiretsu, in which the collaborators formally mark their mutual commitment by cross-holdings of equity stakes, is a prominent example.⁸³ German economic history is replete with analogous organizational forms, often centered on a bank voting (and in some cases owning) equity stakes and making long-term loans to a network of related companies.⁸⁴ This is stakeholder, not shareholder capitalism: the parties to collaboration have long-term interests in enterprises on whose success their identity depends, not short-term financial interests in joint ventures. It is braiding by other means. Instead of using an information exchange regime and dispute resolution mechanism to raise switching costs, the parties raise switching costs—in effect prohibiting exit from the relation—and then devise ways of sharing information to work productively within the constraints they have imposed. Exponents of this form of economic organization speak of the mutual commitments between employees and firms and firms and their suppliers as “beneficial constraints”: The mutual accommodations they entrain were thought to increase the adaptability of the whole economy, making it robust in circumstances where clashing, short-term calculations of interest create coordination problems in the seemingly more flexible contractual systems.⁸⁵

This juxtaposition is, of course, overdrawn. In practice, suppliers in the Rhineland economies have to undergo a long period of qualification and careful scrutiny by their customers before achieving the status of long-term partner.⁸⁶ To the extent this is so, the relation is in part the outcome, not the sole cause, of collaborative behavior, and the difference between the

⁸³ MASHIKO AOKI, *INFORMATION, INCENTIVES AND BARGAINING IN THE JAPANESE ECONOMY* (1990).

⁸⁴ G. HERRIGEL, *INDUSTRIAL CONSTRUCTIONS: THE SOURCES OF GERMAN INDUSTRIAL POWER* (2000).

⁸⁵ Wolfgang Streeck, *Beneficial Constraints: On the Economic Limits of Rational Voluntarism* in *CONTEMPORARY CAPITALISM: THE EMBEDDEDNESS OF INSTITUTIONS* at 197–219 (1997).

⁸⁶ Ken-ichi Imai, *Japan's Corporate Networks*, in, *THE POLITICAL ECONOMY OF JAPAN*, v. 3, *CULTURE AND SOCIAL DYNAMICS* 198, 217-218. (SHUMPEI KUMON & HENRY ROSOVSKY, EDS. 1992).

systems diminishes. Additionally, these relationships are supported by other complementary features of the economy, including the structure of the labor and capital markets, which in turn limit the range of economic activities the economy can support. For example, such stakeholder economies are better suited to incremental innovation than to disruptive innovation.⁸⁷

But even with this qualification, the existence of an alternative form of braiding—building trust fundamentally through long-term obligations rather than incremental collaboration—raises a pertinent question: Are the two forms functionally equivalent, delivering the same results in equivalent economic settings? If so, then contracting for innovation should be understood as a particular, culturally-specific solution to a general governance problem: a solution, for instance, that prefers to see collaborators as shareholders rather than as stakeholders. If not, then what features of the economic setting will cause rational actors, regardless of such cultural preferences, to choose one form of braiding over the other?

In the absence of research directly comparing the explanatory power of the two hypotheses, our response is necessarily speculative. Nonetheless, we strongly incline to the view that the emergence of the form of braiding we observe in contracting for innovation is explained not by culture but by features of the setting. In particular, we suggest that braiding by incremental collaboration is explained by (increasingly) high levels of uncertainty as manifest in the need to search further afield—further away from the current trajectory of development—for partners in collaboration, precisely the opposite of the incremental innovation characteristic of the stakeholder economies. The increased probability of such distant and unforeseeable collaborations increases the risks of long-term commitments and correspondingly the attractiveness of an open-ended form of braiding that builds trust without relying on such commitments. Three considerations weigh in favor of that conclusion.

⁸⁷ Peter A. Hall & David Soskice, An Introduction to Varieties of Capitalism, *in* VARIETIES OF CAPITALISM: THE INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE 50--54 (PETER A. HALL & DAVID SOSKICE EDS., 2001), makes this point with respect to Germany and Japan (calling them coordinated capitalism systems), but adds to the argument that the political systems of each country are also complementary to the stakeholder structure. Mashiko Aoki *Toward an Economic Model of the Japanese Firm*, 28 J. Econ. Lit. 1, 9 (1990), makes the same point with respect to Japan.

First, formal, long-term collaborative relations among firms of the keiretsu type have been under strain for a decade or more, in Germany as well as Japan.⁸⁸ It is difficult to disentangle the various sources of this strain. Changes in capital markets, particularly the increased sources of capital, with complex implications for the utility of cross-holdings play a role, as do the impact of low stock prices and increased international capital requirements on the ability of Japanese banks to maintain cross-holdings.⁸⁹ Pressures for improved financial performance may cause firms to shift to low-cost suppliers, at the detriment of long-term relations with more capable collaborators. But there are consistent reports of strains within “vertical” keiretsu linking upstream suppliers and their downstream customers.⁹⁰ A careful study, for example, of the changing relation between Toyota and Denso, its main supplier of electric and electronic components and systems, suggests that collaboration within the traditional framework is deeply troubled. Toyota, which spun out Denso as an independent company in 1949, concluded by the late 1980s that it needed to build up its own internal expertise in electrical engineering and in the manufacture of electronic components in order to better monitor its partner. As part of the same effort to become a more active and capable collaborator, Toyota began co-developing sophisticated equipment with Texas Instruments and other suppliers.⁹¹

Thus, the shift was neither towards more vertical integration nor short-term contracting, but rather in the direction of the “open” and deliberately monitored collaboration typical of incremental braiding in contracting for innovation. Studies of the reorganization of German

⁸⁸ For Germany, see G. HERRIGEL, *MANUFACTURING POSSIBILITIES: CREATIVE ACTION AND INDUSTRIAL RE-COMPOSITION IN THE US, GERMANY AND JAPAN* (2010). For Japan, see, for overviews, J. M. Dow, *Japanese Keiretsu: Past, Present, Future*, 26 *Asia Pacific J. Mgmt* 333 (2009), and Jean McGuire, S. D. & Toru Yoshikawa, *A Comparison of Vertical and Horizontal Keiretsu*, Proceedings, Academy of Management Meetings (Honolulu 2005).

⁸⁹ Hideaki Miyajima & Fumaki Kuroki, *The Unwinding of Cross-Shareholdings in Japan: Causes, Effects, and Implications*, in *CORPORATE GOVERNANCE IN JAPAN: INSTITUTIONAL CHANGE AND ORGANIZATIONAL DIVERSITY* (Masahiko Aoki, Gregory Jackson & Hideaki Miyajima eds., 2009).

⁹⁰ C. A. Lincoln, *Keiretsu, Governance, and Learning: Case Studies in Change from the Japanese Automobile Industry*, 12 *Org. Sci.* 451 (2001).

⁹¹ *Id.*

customer-supplier relations report similar changes.⁹² Moreover, a study of Taiwanese makers of advanced computer components and peripherals, who collaborate with both United States and Japanese customers, finds that the suppliers prefer the “American” approach of building relations through joint problem solving to the “Japanese” focus on deepening the mutual commitments of prior relations.⁹³ This is because problem-solving accelerates the firms’ development of their own capacities. Indeed the CEO of one firm included in the study criticized the “Japanese” approach based on prior networks as creating dis-incentives to learn:

“...say, whenever a problem arises, well, you simply assume that [a customer firm closely connected to his firm] can’t quit you anyway. Then you won’t bother to make any serious improvement. It’s like, when we are dealing with our family, we are more relaxed.”⁹⁴

Suppliers that grew up with a restricted range of partners in such protected conditions were fragile,

like flowers in a greenhouse. They easily perish when problems arise. They haven’t been tested or challenged in the real natural environment. They can’t be strong. That’s why we can’t just confine ourselves to being the internal supplier of [the closely-connected customer firm mentioned above] or [another closely-connected customer firm]. We have to reach out to serve other top-tier customers. Only then we will grow and our organization and operations will improve.⁹⁵

Second, early efforts in the 1980s to institutionalize collaborative innovation in the United States in fact established long-term commitments on the assumption that this was important to building trust, and failed in no small measure because these very commitments created perverse incentives that undermined the intended cooperation. Again, the evidence is anecdotal but strongly suggestive. For example, a large joint-venture between a manufacturing firm and a computer services firm to co-develop advanced management systems created, in the words of one of the lawyers who designed the new entity, a “haven for shirkers and a Gulag for

⁹² C. Liu, *Collaboration on Thin Ground: Contract Production Arrangements Between Taiwanese Firms and Their American MNC Customers in the Personal Computer Industry*, unpublished doctoral dissertation, Department of Sociology, University of Wisconsin-Madison (2009).

⁹³ *Id.* at Ch, 7.

⁹⁴ *Id.*

⁹⁵ *Id.*

innovative spirits.”⁹⁶ The joint venture was a haven for shirkers because slackers in both of the joint-venture partners sought to transfer to the new entity in the (well-founded, as it turned out) expectation that their lack of engagement would be less easily detected in a new organization with fluid roles and job descriptions. It was a Gulag for innovative spirits because managers in both of the joint venture partners discovered that a convenient way of ridding themselves of irritatingly insistent proponents of new ideas was to transfer them to the new entity, where, it was to be presumed, novelty of all sorts was welcome.⁹⁷ Repetition of such experiences apparently played a part at the time in persuading lawyers engaged in many similar deals that it would be advantageous to build trust incrementally rather than by starting with long-term commitments.⁹⁸

On the basis of such anecdotes we cannot, of course, rule out the possibility of cultural or other path dependent influences: German or Japanese employees and managers might have reacted differently in the same circumstances, and the path dependence resulting from sequential selection of complementary institutions makes the starting point very important.⁹⁹ But the anecdotes do point to specific mechanisms by which long-term formal obligations can create incentives for strategic behavior that crowd out the informal cooperation they were intended to encourage. In combination with the poor overall performance in recent decades of braiding through long-term commitments, these anecdotes suggest that this variant has important vulnerabilities in the contexts we examine, consistent with the limitations the literature highlights in economies characterized by this variant of braiding.

A third and crucial consideration in support of the view that braiding through iterated problem solving is a response to changes in context, not cultural preferences, is the emergence in the United States of similar regimes in a variety of settings where innovation is increasingly important, though not as closely tied to technological change as in the cases discussed so far. This has been accompanied by the recognition by courts and regulatory bodies that protection of

⁹⁶ Interview with Gregg Kirchoffer, Partner, Kirkland & Ellis, Chicago, Ill., April 10, 2009.

⁹⁷ Id.

⁹⁸ Id.

⁹⁹ See Aoki, *supra* note __; Paul Milgrom & John Roberts, *Complementarities and Systems: Understanding Japanese Economic Organization*, 9 *Estudios Economicos* 3 (1994).

such arrangements has become important to commercial exchange. The next Part, therefore, extends the discussion by examining braiding in some of these novel settings in order to indicate its general domain, and by distinguishing forms of judicial enforcement of the new regimes that further trust-building by avoiding crowding out from those that do not.

III. BRAIDING IN THE COURTS: FROM TECHNOLOGICAL TO ENTREPRENEURIAL INNOVATION

A. Braiding's Domain: Supporting the Search for Partners in an Uncertain World

Uncertainty has increased, we have argued, because parties can no longer expect the next generation of solutions to emerge directly from current practice--solutions can and do come from more and more unexpected places, off the trajectory of development. For that reason, parties constantly have to search for unexpected alternatives to current technique. Uncertainty and search are thus two sides of the same coin, and in an uncertain world the search for partners capable and willing to engage in incompletely specified collaboration becomes an essential part of doing business rather than an incidental preliminary. The primary actors have responded to these changes most explicitly with contracts for joint technological innovation that allow intensive scrutiny of partners while protecting against opportunism. But related changes are occurring incrementally, with less direct connection to technical development, in commercial contracting, corporate acquisitions and anti-trust, among other domains.¹⁰⁰ In these areas, too,

¹⁰⁰ In construction, contractually specified information exchange regimes are now often used to facilitate coordination during complex projects, and especially to register emergent problems and respond effectively to them. See for example AGREEMENT by and between Georgetown 19th Street Development, LLC, (as authorized agent for HTRF Ventures, LLC) "Owner" and Turner Construction Company" The Construction Manager" for The West Side 18th and 19th Street Project located at 527-537 West 18th Street, New York, New York, Dated as of April 1, 2003 (on file with the authors). Article 5.2 of the Agreement provides

Throughout the Pre-Construction Services Phase and the Construction Services Phase of the Work, the Key Personnel, and the Construction Manager's Trade Contractors shall meet at least once a week (and more frequently if required by Owner) with Owner and the Architect for the purpose of (i) reviewing the Work, or any component thereof, in respect of design, construction, costs incurred and to be incurred, and progress, and (ii) preparing a list (to the extent reasonably foreseeable) of decisions or actions which Owner must make or take within the next sixty (60) Days to avoid delays in completion of the Work, or any component thereof.

For a detailed account of how such mechanisms function in practice, see ATUL GAWANDE, THE CHECKLIST MANIFESTO: HOW TO GET THINGS RIGHT 54-71(2009).

the parties increasingly realize that the feasibility of many projects can only be determined by joint investment in the production of information to evaluate whether a project is profitable to pursue. Consequently, parties seek to distinguish agreement on the process of disciplined co-evaluation from final agreement on an eventual project.

Ideally, courts would respond to the challenge of searching for partners in uncertain environments by enforcing the chosen methods of mutual cooperation on terms consistent with the arrangements themselves; that is, by imposing low-powered sanctions designed to encourage compliance with the information exchange regime (and the informal relations it supports) while avoiding high-powered sanctions that incentivize the behavior that crowds out informality and destroys the braid. And, indeed, this is what we are beginning to see: Courts in leading cases are sanctioning shamelessly selfish abuse of information-exchange regimes and sometimes deploring the unwillingness of the abusing party to make use of the joint problem solving mechanism that it has co-sponsored. Because the sanction is tied only to the commitment to collaborate, damages for breach of the agreement in these instances are limited in principle to the reliance costs incurred in the collaboration. In this way, the adaptation protocols can achieve their intended purpose of generating information and trust precisely because they never entail an obligation to continue collaborating beyond the period of joint exploration.

But as might be anticipated in an emergent area of law, the decisions of courts called on to enforce braided contracts are not uniformly consistent with the enforcement theory we have developed in this Article. Some decisions invite the award of damages for parties who participate faithfully in the information exchange regime but then decide that it is not profitable

Similar collaborative arrangements appear to be proliferating in business process outsourcing. See, for example, The Professional Services Agreement between New Century Financial Corporation and Accenture LLP, dated January 25, 2006, available at <http://contracts.onecle.com/new-century-financial/accenture-services-2006-01-25.shtml>, last visited Jan. 11, 2009. The Agreement provides that Accenture will supply defined Human Resource services to New Century, and periodically improve them (7.4). Moreover, under the agreement Accenture will conduct surveys of New Century employees to determine their level of satisfaction with the services provided (7.5). “If the results of any satisfaction survey .. indicate that the level of satisfaction with Supplier’s performance is less than the target level ..., Supplier shall promptly: (i) conduct a Root Cause Analysis as to the cause of such dissatisfaction; (ii) develop an action plan to address and improve the level of satisfaction; (iii) present such plan to New Century for its review, comment and approval; and (iv) take action in accordance with the approved plan and as necessary to improve the level of satisfaction.” (7.6 (c))

for them to continue to pursue the joint project.¹⁰¹ Other decisions contemplate (or at least invite the possibility of) the award of full expectation damages for breach of the information-exchange obligation.¹⁰² In both instances, courts have failed to appreciate the importance of limiting formal enforcement to the imposition of low-powered sanctions focused on willful violations of the collaboration agreement itself. The prospect that the breakdown of collaborative exploration could give rise to liability merely because ultimate agreement could not be achieved or imposed on the scale of a failed joint project, creates the kind of incentives that undo braiding by inducing strategic crowding out of informal enforcement.

In this Part, we connect a review of the pertinent decisions with the preceding discussion of formal and informal enforcement. We begin with decisions in which important elements of the governance structure—the low powered formal sanctions that support informal enforcement—are implied by courts and regulatory bodies as default rules. This discussion moves from contexts where information exchange is centered on technology to ones where it is not. We contrast the benefits of this approach with the costs of imposing high powered sanctions. Here we turn to cases in which courts, in like situations, either consider imposing damages for a failure to reach ultimate agreement or consider imposing expectation rather than reliance damages in instances where opportunism is observed. The divergent approaches to formal enforcement reveal the absence of a sound theoretical construct that courts can use to determine a) when the parties have agreed to explore possibilities for collaboration but have not yet committed themselves to a collaborative project and b) what remedies are appropriate for breach of such commitments. Here we show that the same analysis of braiding that allows courts to know what kind of sanctions to impose on breaches of collaborative obligations can guide determination of when to impose them.

¹⁰¹ See TAN *infra*.

¹⁰² The award of expectation damages for breach of a braided contract would be speculative since the alleged breacher will have abandoned the collaboration before the ultimate project was finalized. Expectation damages purports to put the injured party in the position she would have been in had the collaborative exploration not only been successfully concluded, but a joint project also agreed upon and realized. See discussion TAN *infra*.

B. Technological Innovation: Braiding with “Low-Powered” Formal Enforcement.

The question of whether courts would formally enforce elements of the adaptation protocols of collaborative agreements was raised in *Eli Lilly & Co. v. Emisphere Technologies Inc.*¹⁰³ Lilly and Emisphere agreed in 1997 to collaborate in research on new chemical “carrier” compounds. The goal was to use these molecules to deliver therapeutic proteins to patients orally, carrying them intact through the human digestive system, which is designed to break proteins into their component amino acids. The research relationship required Lilly and Emisphere to share valuable information. The relationship broke down in a dispute over whether Lilly breached the contract by pursuing its own secret research projects with Emisphere's proprietary carriers.¹⁰⁴

Emisphere contended that in 2000 Lilly began carrying out secret, independent research projects using Emisphere's carriers with proteins other than those committed to the collaborative project. Emisphere also contended that Lilly further violated the agreement by having the employees who worked on the joint program provide confidential Emisphere information to the Lilly team working on the secret projects. The issue for the court was whether Lilly's violation of the adaptation protocols only gave rise to a suit for patent infringement by Emisphere, or whether it gave rise to an independent remedy for breach of contract and, if so, whether Emisphere could terminate the contract and thereby capture the fruits of a valuable, jointly created opportunity.

The court found that the contract was much more than a patent license. Rather, the parties had agreed to a close and collaborative research relationship in which Emisphere provided Lilly with a great deal of information, not all of which might be protected by patent law. Thus, held the court, there was an implied covenant not to use that information outside the scope of the license agreement. In short, the parties had entered into a form of cooperative agreement that had important—and legally enforceable—limits. When Lilly undertook its secret

¹⁰³ 408 F. Supp. 2d 608 (S.D. Ind. 2006).

¹⁰⁴ The agreement provided, inter alia, that “Lilly shall not have any rights to use the Emisphere Technology or Emisphere Program Technology other than insofar as they relate directly to the Field and are expressly granted herein.” Id. at -- (Clause 2.1).

research projects, it not only risked a claim of patent infringement, but it breached the contract that gave it the limited license in the first place. Holding that Lilly had therefore forfeited its investment in the joint project, the court concluded:

Lilly and Emisphere entered into a close, collaborative research relationship that required trust and good faith on both sides. After several years of joint research, Lilly decided it really did not need Emisphere any further, so it decided to pursue a secret research strategy in breach of its contractual obligations to Emisphere. The parties in this case are both highly sophisticated and well-counseled businesses that have the right to try to exercise their full legal rights under the relevant contracts. Lilly has asserted theories to justify its actions under the contracts, but those theories are not supported by the evidence or the law.¹⁰⁵

At one level, *Lilly v. Emisphere* illustrates how courts can use formal enforcement to support a contractual relationship when informal mechanisms have failed. But by only sanctioning “red-faced” violations of the collaborative agreement, such as the secret research group formed by Lilly outside the informal exchanges created by the agreement itself, the court did not attempt to regulate the nature of the collaborative interactions. Thus, the maintenance of the adaptation protocols established by the parties was left entirely within the province of the internally generated enforcement mechanism. The formal enforcement only excluded a (secret) alternative process that undermined the trust that was in fact generated through braiding.

¹⁰⁵ *Id.* at --. A similar result was reached in an analogous case, [Medinol Ltd. v. Boston Scientific Corp.](#), 346 F. Supp. 2d 575 (S.D.N.Y.2004). In *Medinol*, the parties entered into “a close and extensive contractual relationship” for research, development, manufacture, and distribution of stents for medical uses.” *Id.* at 581. Medinol was to manufacture the stents and Boston Scientific was to sell them in the United States under license from Medinol. The parties agreed that Medinol would establish an “Alternative Line” for manufacturing stents, which Boston Scientific would be permitted to operate under license from Medinol so as to reduce the risk of supply disruptions. That license was limited to “the operation of the Alternative Line.” *Id.* at 597. Boston Scientific then set up a secret manufacturing operation outside the scope of the Alternative Line. Although there was no express covenant against such manufacture, the court found that the parties' close collaborative relationship showed that the unauthorized manufacturing amounted to a breach of contract, *id.* at 598, without limiting Medinol to a patent infringement suit. The court further found that Boston Scientific's stealth and secrecy showed it had acted in bad faith by setting up the unauthorized line. *Id.* at 596. The court granted summary judgment for Medinol on liability for the breach, leaving only the issue of damages for trial. See also, [Shaw v. E.I. DuPont De Nemours & Co.](#), 126 Vt. 206, 226 A.2d 903, 905-07, 909 (1967) (affirming a damage award for breach of an implied covenant not to use a patent beyond the scope of license).

2. *The Federal Trade Commission v. Intel Corp.*

A prominent manifestation of the increased importance of search and preliminary exploration of collaborative possibilities in an increasingly uncertain world is the spread of platform production: systems in which applications or devices have value because they are linked and conveniently accessed through a common operating system, and conversely the operating system has value because of its ability to accommodate a wide and shifting suite of applications.¹⁰⁶ Co-development is endemic and persistent in such systems: no can firm can command the range of expertise needed to build operating systems and applications of the current generation, let alone the range that will prove necessary for succeeding ones. Collaborative exploration of the feasibility of new features of the operating system or innovations in applications is routine. It is not a response to an unusual opportunity, as might seem to be case for any particular collaboration between, say, big pharma and little pharma viewed in isolation. Rather, collaboration is a well-defined phase in the product cycle of the industry, with correspondingly well honed protocols regulating the content and timing of the information provided.

Intel Corporation is the leading maker of general-purpose microprocessors—the central processing unit or “brains” of the computer. With a current world market share of about eighty percent of total annual dollar sales, Intel Corp. is widely acknowledged as a leader—perhaps *the* leader—in platform development.¹⁰⁷ Product generation after product generation, Intel maintains various innovative “ecologies” in which it, together with its independent collaborators, develop new tools for producing microprocessors every more densely packed with semiconductor devices, new software operating systems, new applications and new devices for speeding the flow of information to and from the microprocessor to other components of the computer. Because the capabilities of the computer depend so directly on the capabilities of the

¹⁰⁶ See Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 Harv. J.L. & Tech. 85, 90–96 (2003) (describing evolution towards open-access modular platform technology in three industries and noting that modularity facilitates innovation by organizing independent complementary specialized producers); cf. David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 Yale J. Reg. 325, 331–36 (2003) (describing economics and conditions of platform markets, which productively coordinate needs and abilities of complementary participants).

¹⁰⁷ ANNABELLE GAWER & MICHAEL A. CUSUMANO, *PLATFORM LEADERSHIP: HOW INTEL, MICROSOFT, AND CISCO DRIVE INDUSTRY INNOVATION* (Harvard Business School Press, 2002).

microprocessor, it is impossible to design the next generation of a computer without detailed, advance knowledge of the performance of the microprocessor it will incorporate. Intel makes the necessary design information available to its collaborators in the personal computer, workstation and server industries through the Advanced Technology (AT) program at the relevant internals.¹⁰⁸ Under this program, Intel furnishes customers with electrical, mechanical, and thermal characteristics of its microprocessors, as well as advanced product samples, and technical assistance to test and debug systems.

In 1998, however, three of Intel's leading customers lodged a complaint with the Federal Trade Commission alleging that on separate occasions Intel excluded them from the AT program in order to force them to license Intel microprocessor-related technology that they developed and owned.¹⁰⁹ The Digital Corporation, then a leading maker of mini-computers, had previously sued Intel for infringing its patent rights in developing the Pentium Pro device.¹¹⁰ The presumed purpose of the alleged infringement was to close some of the performance gap between Intel's products and Digital's superior Alpha processor. Digital also alleged in the complaint that Intel responded to the suit by publicly excluding it from the AT program, demanding the return of technical information, and deliberately creating uncertainty within the industry regarding Digital's access to timely knowledge of new Intel products and thus its ability to deliver the next generation of its computers on the schedule required by the market.¹¹¹ Intergraph Corporation, the second complainant, and then a leading manufacturer of advanced engineering workstations, claimed that in 1996 Intel had demanded from Intergraph a royalty-free license to use the latter's Clipper microprocessor technology as a condition of continued participation in the AT program. When Intergraph refused, Intel denied it access to crucial graphics technology.¹¹²

¹⁰⁸ FTC, In the Matter of INTEL CORPORATION, a corporation. DOCKET NO. 9288 COMPLAINT, June 8, 1998, at 1-3.

¹⁰⁹ FTC complaint at 3.

¹¹⁰ FTC complaint at 5.

¹¹¹ Id.

¹¹² FTC complaint at 6.

Intel increased pressure on Intergraph the following year, when Intergraph claimed that third-parties, using Intel technology, were infringing certain of its patents, and these parties in turn sought indemnification from Intel against Intergraph's claims.¹¹³ When Intergraph again refused the royalty-free license, Intel allegedly again retaliated with exclusion from the information regime.¹¹⁴ The third complainant, Compaq Computer Corporation, then the largest maker of personal computers in the world, claimed that it had been excluded from the AT program because of a suit against a computer systems manufacturer, Packard Bell Electronics, Inc., for infringing its patents.¹¹⁵ As the supplier of the infringing components, Intel had intervened in the suit on Packard Bell's behalf.

Thus, taking the allegations in the complaint at face value, it appears that Intel abused the iterative collaboration inherent in platform development in two ways: first by expropriating technology developed by some of its key partners, and second by using the AT program to cow them into tolerating this misuse. Judging again by appearances, it seems that Intel was, until the time of the complaint, largely successful in achieving its purposes: Apparently in response to the pressure exerted on them, Compaq and Digital cross-licensed the relevant technologies with Intel. Intergraph successfully resisted, but only by obtaining a preliminary injunction from a federal district court requiring Intel to permit Intergraph to participate in the AT program pending resolution of the suit claiming patent infringement.¹¹⁶

In its settlement with Intel, the FTC was at pains to protect the AT regime, broadly defined as encompassing "all information necessary to enable a customer to design and develop, in a timely way, computer systems incorporating Intel microprocessors," from abuse by any of the participants.¹¹⁷ Section IIA of the Settlement expressly prohibits Intel from withholding or threatening to withhold advance technical information, or refusing or threatening to refuse to sell

¹¹³ Id.

¹¹⁴ FTC complaint at 7.

¹¹⁵ FTC complaint at 8.

¹¹⁶ FTC complaint at 7-8.

¹¹⁷ Docket No. 9288, Agreement Containing Consent Order (Paragraph I.C).

microprocessors to particular customers to obtain advantage in a dispute over intellectual property.¹¹⁸ But conversely, the agreement protects Intel against (would be) customers or competitors seeking to use the AT program to gain access to information that would advantage them in competition with Intel and thereby obligate Intel to enter commercial relations that it would not otherwise entertain.¹¹⁹ Thus, Section IIB provides that Intel may withhold AT information from customers based on lawful business considerations unrelated to the intellectual property disputes.¹²⁰ For instance, Intel is neither required to provide AT information or microprocessors to potential competitors who have not designed or developed such devices within the preceding year, nor to actual competitors who already produce like devices.¹²¹ As the FTC emphasized in its own analysis, the agreement

does *not* impose any kind of broad "compulsory licensing" regime upon Intel. So long as it is otherwise lawful, Intel is free to decide in the first instance whether it chooses to provide or not provide information to customers, and whether to provide more information or earlier information to specific customers in furtherance of a joint venture or other legitimate activity. Moreover, the Order is limited to the types of information that Intel routinely gives to customers to enable them to use Intel microprocessors, not information that would be used to design or manufacture microprocessors in competition with Intel.¹²²

In distinguishing between the AT regime—open to all with legitimate interests—and commercial decisions based on participation in the regime—taken to be within the discretion of Intel and its potential partners—the FTC’s resolution of the complaint against Intel fully reflects and gives legal effect to the distinction, central to braiding, between the obligation to explore collaboration and the freedom to choose to collaborate or not on the basis of this experience. It thus affirms, in a key regulatory domain, the essential elements of the *Emisphere* holding in contract.

¹¹⁸ Id at Section IIA

¹¹⁹ Id. at Section IIB. 3.

¹²⁰ Id. at Section IIB. 2.

¹²¹ Id. at Section IIB. 4, 5.

¹²² Federal Trade Commission, Analysis of Proposed Consent Order to Aid Public Comment (1999), on line at <http://www.ftc.gov/os/1999/03/d09288intelanalysis.htm>, last visited Dec. 22, 2009.

C. Entrepreneurial Innovation: Braiding in Preliminary Agreements.

1. *The Search for Partners and the Binding Duty to Negotiate in Good Faith*

Assume two commercial parties agree to collaborate in investigating the prospects for what they hope to be a profitable commercial project.¹²³ The parties agree on the nature of the initial investment that each is to make to support the collaboration, but the ultimate project, and what precisely each is to do to achieve it, cannot be described. As a result, important terms also cannot be agreed upon. Nevertheless, the parties agree to proceed with their respective investments and also agree to negotiate the remaining terms of the contract once they can observe the fruits of those efforts. These two parties have reached what the law now recognizes as a “preliminary agreement.” They are unable to write a more complete incentive contract at the outset because they function in an uncertain environment in which a profitable project might take a number of forms, and just which form will work, if any, is unknown at the outset. Notwithstanding the continuing uncertainty, each party must now make an investment in information if the project is to be realized. Only by each party investing and sharing the information that the investment reveals can they determine collaboratively whether their project can possibly succeed and, if so, on what terms. The increased knowledge about the project revealed by the initial investments, together with realization of the state of the world in which the project will be pursued, will then permit the parties to determine whether to finalize the deal with a fully enforceable contract.

The question is whether and to what extent is a preliminary agreement that looks to the future exchange of private information formally enforceable? The question is important because the parties meet as strangers with no necessary prospect of an on-going relationship, and as yet there is no mechanism to stimulate the development of trust. Thus, the risk of opportunism is significant. This is particularly the case where the parties undertake to invest concurrently and then to share the information that the investments yield. Suppose one party who has agreed to invest at the same time as her counterparty thereafter elects instead to wait and see what comes of her counterparty’s investment – in effect reneging on the mutual commitment to collaborate.

¹²³ The discussion in this section draws on Alan Schwartz & Robert E. Scott, *Precontractual Liability and Preliminary Agreements*, 120 Harv. L. Rev. 661 (2007).

Delaying a promised investment under these conditions offers several strategic advantages. First, the passage of time and her partner's investment is likely to reveal whether the project will be profitable. If so, the opportunistic party—having yet to make any investment in the project—can exploit the counterparty in a negotiation over the terms of the ultimate contract.¹²⁴ Second, if the project proves unsuccessful, delay permits the opportunistic party to avoid the resulting sunk costs. Those savings will likely be larger than any offsetting losses from delayed returns if the project instead proves profitable.¹²⁵

Historically, preliminary agreements such as this would be unenforceable under the indefiniteness doctrine of the common law of contracts.¹²⁶ Recently, however, in a major shift in doctrine, courts have relaxed the common law rule under which parties are either fully bound or not bound at all. Instead, a new enforcement rule is emerging to govern cases where the parties contemplate further negotiations.¹²⁷ This new rule responds to the increasing importance to

¹²⁴ In negotiating the terms of the ultimate contract, the division of the contractual surplus will not reflect the fact that one party has made specific investments that contribute to the surplus. Because the specific investments are sunk costs, the opportunistic party can compel the investing party to share the payoffs from her investment. For discussion, see Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 Yale L. J. 541, 559-62 (2003).

¹²⁵ For a formal model supporting this analysis, see Schwartz & Scott, *supra* note – at 676-91.

¹²⁶ ROBERT E. SCOTT & JODY S. KRAUS, *CONTRACT LAW AND THEORY* 29-41, 299-303 (4TH ED. 2007). Two factual patterns typify unenforceable indefinite agreements at common law. The first, illustrated by *Varney v. Ditmars*, [111 N.E. 822 (N.Y. 1916)] is the indefinite bonus contract. In *Varney*, the New York Court of Appeals held a bonus agreement for "a fair share of the profits" too indefinite and thus unenforceable. The second archetype is a variation on the first, extending the common law rule to agreements where essential terms were explicitly left to further negotiation. For example, in *Petze v. Morse Dry Dock & Repair Co.*, 109 N.Y.S. 328 (App. Div. 1908), the New York appellate court held that an agreement providing that "the method of accounting to determine the net distributable profits is to be agreed upon later" was unenforceable under the indefiniteness rule. Common law courts thereafter have consistently held that such "agreements to agree" are unenforceable so long as any essential term was open to negotiation.

Id. at 35.

¹²⁷ The rule originated with the opinion of Judge Pierre Leval in *Teachers Insurance and Annuity Association of America v. Tribune Co.*, 670 F. Supp. 481, 488 (S.D.N.Y. 1987). Judge Leval identified two separate types of "preliminary agreements." He labeled as "Type I" those cases where the parties have agreed on all material terms but have also agreed to memorialize their agreement in a more formal document. Disputes arise primarily because parties have failed to express clearly their intention as to *when* their arrangement would be legally enforceable. Here the question is solely one of timing—when have the parties manifested an intention to be legally bound? In contrast, "Type II" agreements concern **A**binding preliminary commitments **@ B** the preliminary agreements we analyze here. In this latter case, the parties agree on certain terms but leave possibly important terms open to further negotiation. This requires courts to determine *whether* such an agreement had been made, *what* the duty to bargain in good faith entails, and *which* remedy should be awarded for breach of that duty. This framework

successful collaborations of the search for new partners in an uncertain environment. The new rule starts with the presumption that preliminary agreements typically do not create fully binding contracts.¹²⁸ This presumption rests on the traditional common law view that courts should not hold parties to contracts unless the parties intended to make them. The shift comes from courts now recognizing that welfare gains can result from attaching some level of formal enforcement to agreements to collaborate that were intended to bind despite the need for further negotiation. The new default rule thus enforces “a mutual commitment to negotiate together in good faith in an effort to reach final agreement.”¹²⁹ Neither party, however, has a right to demand performance of the contemplated transaction. If the parties cannot ultimately agree on a final contract, they may abandon the deal. Both parties thus enter into an option on the ultimate deal, which is exercisable after the parties learn the information produced through the preliminary investments and whose price is the cost of the preliminary investment. A federal court recently referred to this way of enforcing preliminary agreements as “the modern trend in contract law.”¹³⁰

This new rule governing preliminary agreements to collaborate -- creating a legal duty to bargain in good faith but not requiring the parties to agree -- is an appropriate first step in solving the parties’ contracting problem. As we argued above, it is helpful to attach some formal support to those agreements that depend on initial learning to achieve innovation, particularly when the imposition of low-powered enforcement stimulates the mechanisms that build trust. The contemporary judicial approach to preliminary agreements of this sort appropriately opens the door to judicial support of mutual learning in contracts for innovation. Nevertheless, the courts’ experience so far provides little normative guidance concerning the breadth of the enforceable obligation, an important shortcoming when, as we have seen,¹³¹ the breadth of judicial

has been followed in at least thirteen states, sixteen federal district courts and seven federal circuits. *See* Schwarz & Scott, *supra* note – at 76-80.

¹²⁸ See *R.G. Group Inc. v. Horn & Hardart Co.*, 751 F.2d 69, 74 (2d Cir. 1984).

¹²⁹ *TIAA v. Tribune*, 670 F. Supp. at 498.

¹³⁰ *Beazer Homes v. VMIF*, 235 F. Supp. 2d 485, 498 (4th Cir. 2003).

¹³¹ See *TAN* __ *supra*.

enforcement is critical to whether crowding out is the unintended perverse consequence of the new formal enforcement. Most significantly, the courts do not indicate just what the parties should bargain about. The new legal doctrine thus raises the dual questions of when should preliminary agreements be enforced and what precisely is meant by enforcement.¹³²

Our analysis of the function of the braiding mechanism suggests that the parties to this agreement should be legally required to comply with their initial commitments to pursue promised investments (typically investments in information) that are necessary to reveal whether or not the proposed project is feasible. But formal enforcement should play no role in determining whether or not the project should go forward and on what terms. After all, rational parties will pursue efficient projects and abandon inefficient projects. The parties already have strong incentives to negotiate faithfully over the conditions for achieving success. A refusal to negotiate further if a party determines that the project has negative present value should not be a violation of the duty to bargain in good faith. The parties will agree to pursue the project whenever the collaboration yields a present value surplus and not otherwise. Rather, the challenge, as in *Lilly v. Emisphere*, is to discourage parties from defecting early in the relationship before a robust pattern of cooperation has developed. The threat of a legal sanction, therefore, should only be designed to give the parties sufficient opportunity to develop patterns of cooperation supported by switching costs. On this basis, the question for the court should primarily be one of character rather than capability: has one party behaved opportunistically by deferring a promised investment so as to exploit the advantages of hindsight, and, if so, what remedy is appropriate?

2. Enforcing the Duty to Negotiate with only Low-Powered Sanctions.

To what extent, then, can we say that the new legal framework governing preliminary agreements has created a useful braiding mechanism? An examination of litigated cases can only provide some clues as to the utility of imposing formal sanctions on a relationship otherwise dependent upon informal enforcement. One significant datum, however, is available. We would hypothesize that the braiding mechanism would function as a complement rather than as a substitute for legal enforcement if and only if the following condition is satisfied: The courts are

¹³² We discuss the question of what precisely is meant by the duty to negotiate in good faith in Part III E infra.

only deploying low powered incentives; that is, courts only sanction cheating on the parties' mutual commitment to iterative collaboration but do not attempt to regulate the course or the outcome of the collaboration. Put differently, the court should require a party to repay the price the counterparty paid for the option – the amount spent on the preliminary investment – however, it should not require even a breaching party to exercise the option either by completing the transaction or by imposing expectation damages. This hypothesis follows from the evidence that the imposition of such high powered enforcement risks crowding out the trust needed to enforce the agreement informally. An examination of litigated preliminary agreements suggests that courts are divided in their understanding of the reach of the duty to bargain in good faith.¹³³ The outcome in some of the cases, however, does tend to support the braiding hypothesis.

Consider first *In re Matterhorn Group, Inc.*¹³⁴ There, Swatch wanted to sell more watches in the United States by expanding its franchise operations. Matterhorn and Swatch agreed to collaborate on pursuing the possibility of a long-term relationship: the parties signed a letter of intent granting Matterhorn the exclusive franchise for thirty possible sites. Under the agreement, Matterhorn undertook to invest in finding appropriate locations for retailing Swatch watches from among the list of possible locations. Swatch undertook to process diligently the applications for franchises at potentially profitable locations as Matterhorn filed them, and then to seek financing and approval of franchises at chosen locations from its parent firm. Thus, in terms of the framework set out above, the parties agreed to collaborate by making concurrent investments in pursuit of an entrepreneurial innovation: Swatch was to invest in opportunity costs (by granting exclusive rights to Matterhorn) and in the human capital needed to process applications and to become familiar with the American business climate; Matterhorn was to make human capital investments in search and information costs. The project contemplated an iterative exchange of information focused on finding profitable retail sites for selling Swatch watches in shopping malls, but precisely which locations, if any, would be mutually profitable could not be determined without the initial investments by both parties.

¹³³ For an analysis of the litigated cases, see Schwartz & Scott, *supra* note --- at 691-702.

¹³⁴ 2002 WL 31528396 (Bk. S.D.N.Y. 2002).

In this case, the parties had no prior history, they did not share membership in a homogeneous community, nor could they depend on the discipline of repeated exchange to constrain opportunism. As a consequence, informal sanctions were weak at the outset of the relationship and the parties were each at risk of exploitation. And, indeed, Swatch engaged in just the strategic behavior that our framework predicts: It delayed processing several applications and failed to secure the necessary approvals.¹³⁵ The court found Swatch to be in breach of a preliminary agreement to bargain in good faith and awarded Matterhorn reliance damages based on its investment expenditures in investigating the locations in question. Importantly, however, the court denied Matterhorn's claim for expectation damages based on lost profits, holding that "there is no guarantee that it would have opened a store in [that location]."¹³⁶ Thus, the court compensated Matterhorn for the price it paid for the option, but did not protect it from Swatch's decision not to exercise it.

The result in *Matterhorn* is consistent with the hypothesis that narrowly defined duties of good faith will complement a regime that depends primarily on informal enforcement. A properly configured braiding mechanism, such as the one that appears to have been adopted by the court in *Matterhorn*, will likely not crowd out the informal mechanisms that build trust but rather will offer a low powered complement during the early stages of collaboration, thereby giving reciprocity and trust the opportunity to evolve. The court's decision motivates future parties to enter such collaborative relationships and make the iterative investments necessary for an innovative project to succeed. In the absence of a legal rule protecting Matterhorn's initial investment cost, a rational party in Matterhorn's position would anticipate the risk of opportunism and would decline to make the efficient investment. Writing a preliminary

¹³⁵ The court held:

The rejection of the Vail application violated the Letter of Intent. The Letter of Intent granted Matterhorn the exclusive right to negotiate a lease in Vail despite Vail's geographical distance from Matterhorn's base of operation in the Northeast. Furthermore, it required Swatch to review the Vail application in good faith, and in a manner consistent with the criteria discussed above.... [Swatch] unilaterally rescinded the exclusivity that the Letter of Intent had granted, and Swatch's [decision] to reject the Vail application was improper. In addition, Matterhorn sent the Vail letter of intent in late April 1996. Swatch took four months to complete its processing of the application.... Accordingly, Swatch breached the Letter of Intent by rejecting the Vail application for improper reasons.

Id. at 16-17.

¹³⁶ Id.

agreement thus legally commits Swatch to invest as promised, and to reimburse Matterhorn's investment expenditures if it did not, but it does not commit either party to negotiate an ultimate deal.

Another example of a preliminary agreement looking to concurrent investments in the search for partners is *Kandel v. Center for Urological Treatment and Research*.¹³⁷ In *Kandel*, a doctor agreed to move his practice and his family from New York to Tennessee in order to join a urological practice. The parties signed an agreement which provided that Dr. Kandel was to work for one year, and then the parties would "negotiate in good faith" to permit Kandel to purchase stock in the practice group.¹³⁸ The parties did negotiate after one year, but they soon reached impasse over the financial terms of the partnership.¹³⁹ Once the negotiations ceased, Dr. Kandel's employment was terminated. He filed suit against the group, alleging that the defendants had breached their contract to "negotiate in good faith." The trial court granted summary judgment in favor of the defendants and the appellate court affirmed, holding that even if Tennessee recognized a cause of action for breach of an agreement to negotiate in good faith, the evidence here did not demonstrate such a breach by the practice group.

The outcome in *Kandel* is consistent with the normative implications of the braiding hypothesis. The contemporary doctrine enforces such a preliminary agreement to invest in the search for a mutually profitable partnership. Thus, once Dr. Kandel moved and began work he should be protected from any "red-faced" cheating by the practice group, say, for example, its

¹³⁷ 2002 WL 598567 (Tenn. App. 2002).

¹³⁸ The contract contained the following provision:

10. *Agreement to Negotiate in Good Faith Toward Purchase of Equity Ownership*. The Employer agrees that in the event Employee remains continuously employed by Employer for a period of one (1) year and has achieved Board Certification through the American Board of Urology, *Employer will negotiate in good faith with Employee to allow Employee to purchase from Employer that number of shares of Employer's stock which will permit Employee to own the same number of shares as the stockholder holding the most shares of Employer's stock at that time*. Employer anticipates that the purchase price of such stock shall be based on the GAAP book value of the Employer as of the date of the purchase.

(Emphasis added). Id.

¹³⁹ The parties agreed on many terms of the buy-in, such as the formula to be used in determining the amount of Dr. Kandel's compensation, the formula to be used to calculate the amount of Dr. Kandel's buy-in, and the terms of the covenant not to compete. The parties disagreed, however, on the method for calculating the stock redemption value. Id.

refusal to invest concurrently in on-the-job training. The practice group would thus be motivated to invest as promised, anticipating that a court would require the group to reimburse Dr. Kandel's reliance costs should they behave opportunistically. Anticipating this, in turn, would encourage Dr. Kandel to undertake the move to Tennessee. Ideally, the mutual and iterative investments by both parties would build trust and provide the informal enforcement to the agreement to collaborate. On the other hand, the agreement to collaborate did not protect Dr. Kandel from the further risk that, once uncertainty was resolved, the formal partnership agreement might not be finalized. This outcome might occur if the value of Dr. Kandel's services to the firm was less than his opportunity cost of practicing his profession in Tennessee. In that case, the deal would not be surplus maximizing ex post and the firm rationally would elect not to exercise its option to go forward with the deal. In short, the subsequent failure of the deal was a risk that both parties undertook at the time they entered into the preliminary agreement. On this analysis, the court was correct in declining to award contract damages for breach.

The *Kandel* case illustrates the important point that the braiding mechanism has a discrete function: it promotes the investment in informal routines that increase trust and raise switching costs. That does not mean, however, that the "innovation" that the parties contemplate resulting from their collaboration will necessarily succeed. Braiding may well be the best economic form to support collaborative innovation, but economic form does not guarantee that parties will achieve the objectives that led them to collaborate initially.¹⁴⁰

D. Braiding in Corporate Acquisition Agreements.

To this point, we have focused on the braiding of formal and informal enforcement in the context of a collaborative agreement to pursue an innovation that, if successful, will extend over a significant period of time.¹⁴¹ To highlight the breadth of the braiding concept, we turn now to

¹⁴⁰ Note that in the case the court found no bad faith. The facts tend to support the inference that the partnership agreement failed to be consummated because of the divergence between Dr. Kandel's value to the firm and his opportunity cost.

¹⁴¹ See TAN __ supra; Gilson, Sabel & Scott, supra note __

an analysis of braiding in corporate acquisition agreements, which at least on a first take appear to be single transactions and, therefore, unlikely candidates for a braiding strategy that uses formal obligations to help establish informal enforcement techniques that support specific investment.

In fact, corporate acquisitions contemplate *both* simultaneous investments by the two parties over a period of time in order to resolve uncertainty, and which are supported by low powered legal enforcement, as well as explicit contractual obligations that are subject to the full panoply of formal enforcement mechanisms. In this respect, corporate acquisitions are like the small pharma-big pharma joint research efforts discussed above. While in a corporate acquisition the time frame is telescoped, with all of the investment taking place between the execution of the acquisition agreement and the closing of the transaction, a great deal of effort must be undertaken by the acquiring and target companies during that period. Put differently, an acquisition transaction is a long term, iterative collaboration, compressed into a number of months, followed by an end game—the implementation of an incentive contract.. As a result, the potential for opportunism arises and with it the potential for a braiding strategy to address it.

A brief description of the structure of a corporate acquisition agreement provides an account of the stages, however time compressed, between the execution of a corporate acquisition agreement and its closing. We then consider several examples presented in the case law, focusing on judicial opinions because enforcement of low powered legal sanctions is central to the operation of braiding in this context. The first exemplar, *Hexion Specialty Chemicals, Inc. v. Huntsman Corp.*,¹⁴² involves an important recent decision in which the Delaware Chancery Court held that an acquirer violated an obligation of good faith imposed on it by the acquisition agreement during the period between execution and closing. We then turn to several cases dealing with letters of intent concerning a corporate acquisition, each of which poses much the same issues raised in the discussion of preliminary agreements, albeit in an acquisition context. In *Huntsman*, the court reached the right result, but in the latter cases the courts seem to have lost

¹⁴² 965 A. 2d 715 (Del.Ch. 2008).

their way, struggling with doctrine that is unmoored from an underlying theory of a court's proper role in enforcing a braiding strategy.

1. The Structure of a Corporate Acquisition Agreement¹⁴³

Three sets of provisions comprise the basic structure of a corporate acquisition agreement: representations and warranties, covenants, and conditions. Representations and warranties specify what the buyer acquires. These provisions warrant, as of the date of the acquisition agreement, such matters as the accuracy of the target's financial statements; the absence of liabilities for taxes or other matters accruing after the date of the target's most recently audited financial statements; the ownership and condition of assets important to the operation of the target's business; and the absence of problems in particularly important areas, such as environmental and pensions. When an acquisition agreement is executed and closed simultaneously, the agreement need contain little more than a warranties and representations article.¹⁴⁴ The other two elements of the transactional triumvirate – covenants and conditions – are irrelevant when there is no temporal gap between execution and closing.

More commonly, a significant temporal gap will exist. A regulatory regime may require delay, such as the need for agency approval of the transaction, or the need for filings with the SEC, or in connection with antitrust review. More important from our perspective here, delay will result from the nature of the transaction itself; due diligence for some deals can take considerable time. The acquiring company will need to investigate the accuracy of the target's representations and warranties, and to investigate whether the conditions believed necessary to achieve contemplated synergies are present. As a consequence of these factors, mergers seldom close within 90 days of execution of the acquisition agreement, and are sometimes delayed for as long as a year.

Covenants and conditions bridge the timing gap between execution and closing. Covenants require or prohibit particular verifiable actions, such as complying with regulations or

¹⁴³ This discussion draws on Ronald J. Gilson & Alan Schwartz, *Understanding MACs: Moral Hazard in Acquisitions*, 21 J. L. Econ. & Org. 330, 333-40 (2005).

¹⁴⁴ Other subjects, like a contractual statute of limitations that specifies for how long representations and warranties survive and provisions regulating claims for breach, would still demand attention.

not declaring an unusual dividend. Conditions specify the circumstances that, when absent, permit the acquirer not to close. Conditions generally include a requirement that the target's representations and warranties are true, and that no material adverse change in the target's business has occurred. Conditions thus focus on the target's conduct since the agreement's execution and on the occurrence of exogenous events that reduce the value of the target's business. Conditions may also relate to matters that are under the acquirer's control but that also may be subject to the effect of exogenous changes in the business environment. For example, the acquirer may have the right not to close if it is unable to secure adequate financing.

In the period between execution and closing, both parties to an acquisition agreement will need to make significant contemporaneous specific investments in causing the transaction to succeed. Some relate simply to the due diligence process through which the acquiring company assesses the accuracy of the representations and warranties made by the target company – in effect the acquirer assures itself of what it is buying – and develops the non-public information necessary to confirm the potential for post-closing synergies from combining the two businesses. However, even larger investments arise from the need to take steps directed at assuring the acquisition's success even before the transaction closes.

The specific investments not related to due diligence fall into three categories. First, the acquisition's success may depend on pre-closing efforts to facilitate integration of the businesses. In many industries, the announcement of the acquisition agreement's execution, rather than its closing, will trigger the competitive response. For example, both the acquirer and the target may need to begin integrating their product lines by suspending investment in some existing products and may shift R & D efforts to fit the anticipated post-closing strategy. Second, the target company may need to make efforts to retain its work force following the acquisition's announcement. More valuable employees may then become more receptive to competitors' efforts to hire them, with the possible result of an adverse selection cascade. Finally, both the acquirer and the target may have to respond to competitors' soliciting their customers by stressing the potential for adverse effects on customers from difficulties associated with post closing integration.¹⁴⁵

¹⁴⁵The post-execution/pre-closing activities in Hewlett-Packard's acquisition of Compaq illustrate the potential

2. Hexion v. Huntsman: Good Faith in Satisfying Conditions to Closing

Hexion Specialty Chemical, Inc. v. Huntsman Corp.,¹⁴⁶ illustrates the proper judicial role is assuring the functioning of a braiding contract that was embodied in a definitive acquisition agreement. *Huntsman* involved the Delaware Chancery Court's application, in a high visibility case, of Hexion's (the acquiring company's) obligation to use "reasonable best efforts to take all actions and do all things 'necessary, proper or advisable'" to consummate the financing needed to close a \$10.6 billion acquisition of Huntsman.¹⁴⁷ As in acquisition agreements generally, both parties would have to make substantial concurrent investments in the post-execution/ pre-closing period. This is a particular problem for the company being acquired, whose circumstances can change dramatically when the transaction is first announced. This, in turn, creates the potential for opportunism by the acquiring company, and invites the use of a braiding strategy to support informal enforcement of the agreement to invest.¹⁴⁸ In the context of the Huntsman acquisition, the use of low-powered formal enforcement took on special significance in connection with the Hexion's obligation to collaborate in securing financing for the acquisition.

The Huntsman acquisition arose as the asset bubble that finally broke in 2008 approached what was still an unseen cliff over which asset values and the economy would soon tumble. The

magnitude of transaction specific investment integration efforts in a large transaction. Prior to closing, more than 1,000 employees of both companies devoted more than one million hours to integration planning. Pui-Wing Tam & Scott Thurm, "Married at Last: HP, Compaq Face Real Test", WSJ, May 8, 2002. This effort included choosing which of the two companies' products would survive in each product line as well as developing three year plans for each surviving line, with obvious effects on the lines that were to be discontinued. Pui-Wing Tam, "An Elaborate Plan Forces H-P to Stay on Target", WSJ, April 28, 2003, p. 1,10. At the employee level, the top three tiers of managements were selected from among the two companies' managers well before closing. *Id.* At the same time, customers of both companies were the object of intense attention from competitors. One customer recounted that "he gets as many as five calls a week from other computer makers. The pitches frequently aren't subtle. 'You may want to be aware that such-and-such H-P or Compaq product won't be a survivor of the deal,' [the customer] quotes one sales representative as saying." Scott Thurm, Pui-Wing Tam & Gary McWilliams, "Nail Biter: HP Claims Victory on Compaq Merger", WSJ, March 20, 2003. To the same effect, a post-execution/pre-closing survey of Compaq Unix customers showed that they would be "less likely" to buy from the merged company. Scott Thurm, "HP, Compaq Plan the Details of Their Union", WSJ, January 25, 2002.

¹⁴⁶ 965 A.2d 17 (De. Ch. 2007).

¹⁴⁷ 965 A. 2d at 720. This figure includes Huntsman debt that would have been assumed by Hexion in the transaction. *Id.* at 721.

¹⁴⁸ See TAN __ supra.

fact of a vigorous auction for the right to acquire Huntsman made obvious that Huntsman had a good deal of bargaining power to shape the acquisition agreement powerfully in its favor. It did so by dramatically limiting the conditions under which Hexion could elect not to close the transaction.¹⁴⁹ Most important, the agreement did not contain a condition that gave Hexion the right not to close the transaction if it could not obtain the billions of dollars of financing necessary to complete the acquisition. Hexion may have been sanguine about this circumstance because it already had secured bank commitments to provide the necessary financing, although the banks' obligation to fund these commitments was conditioned on the banks receiving an opinion that the post-transaction combined entity would be solvent. The absence of a financing condition was somewhat unusual, a phenomenon of the later stages of the asset bubble.

The absence of a financing condition, however, did not leave Hexion obligated to actually close the multi-billion dollar transaction if it lacked the means to pay for it. Rather, Hexion negotiated a \$325 million cap on damages for not closing the transaction, in effect, giving it an option to abandon the transaction on payment of the damage cap.¹⁵⁰ This termination fee, however, had one critical wrinkle, and this is where the acquisition agreement's braiding strategy came in: the agreement deployed low-powered formal enforcement in support of the pre-closing specific investments necessary for the success of a multi-billion dollar acquisition.

The nature of the low-powered enforcement appears in response to the question of when Hexion could elect not to close the transaction if, because of exogenous changes in the economy, the transaction was no longer as profitable. Of course, the question turned out to be critical because the beginnings of the financial crisis caused Hexion to want badly not to close the transaction. Such circumstances typically are the realm of the material adverse change condition

¹⁴⁹ The discussion in the text elides an important issue in understanding the economic structure of a transaction. To say that one party to a transaction has bargaining power says nothing about how that party will make use of its power. For example, Huntsman presumably could have exercised it power by increasing the price rather than in reducing the circumstances when the transaction would not close. Its choice might have been influenced by its belief that greater uncertainty was developing, or because its decision makers were more risk averse than those of the buyer, or both. We should note that Huntsman had a controlling shareholder group, comprised of Joel and Peter Huntsman (father and son) and a private equity fund – Maitlin Patterson Global Opportunities Partners LP.

¹⁵⁰ 965 A. 2d at 721.

to closing, which allocates between the acquiring and acquiree companies the risk of exogenous change between the execution and closing of the transaction.¹⁵¹

In the Huntsman acquisition agreement, Hexion could decline to close the transaction without the payment of any damages if Huntsman had experienced a material adverse change in its business; Hexion's not closing the transaction because a condition was not satisfied was not a breach at all, and therefore gave rise to no damages to be capped. However, the material adverse change clause was itself drawn very narrowly – changes in Huntsman's industry, including changes in commodity prices, and changes in regulation and in economic or financial market conditions generally, were excluded – so that all that remained as a condition to closing were material adverse changes resulting from Huntsman's own actions.¹⁵² Hexion still bore the risk of the occurrence of exogenous events that lowered the post-transaction value of Huntsman.

¹⁵¹ See Gilson & Schwartz, *supra* note __ at 334-5 (explaining the operation of a material adverse change clause).

¹⁵² This was accomplished by excluding from the exclusions changes that had a disproportionate effect on Huntsman compared to other chemical industry companies. However, even this carve out was ambiguous. For example, many exogenous changes would affect companies differently because of their capital structure. Should one control for capital structure in determining disproportionate result because, presumably, the acquiring company knew the target's capital structure relative to the industry before the transaction?

The Chancery Court's treatment of the material adverse change clause took up the bulk of the opinion. It did not address the application of the disproportionality exclusion to the exclusions from the MAC definition, holding that the seller first had to show there was a material adverse change, before the court had to address whether an exclusion would have disarmed the MAC and the disproportionality exclusion would have disarmed that. 965 A.2d at 736-38. While analysis of the Chancery Court's treatment of the MAC clauses is outside of our focus here, it is worth commenting on the puzzle that this treatment poses for contract theory. As we suggested earlier, parties face a choice between selecting rules or standards. Choosing a rule provides greater verifiability at the cost of turning out to be the wrong measure *ex post*, while choosing a standard accepts more uncertainty *ex ante* to get the benefit of the court's having much better information when the standard ultimately is imposed *ex post* and thereby being able to select an accurate measure of the clause's operation. See TAN ___ *supra* (describing the tradeoff between rules and standards). Acquisition lawyers plainly have chosen to use a standard – a material adverse change as opposed to, for example, numerical triggers keyed to revenue or profits. However, the Chancery Court has made plain that it will not accept the delegation by pointedly refusing to apply a MAC to relieve an acquiring company of its obligation not to close. As the court said in *Huntsman*, with some touch of pride:

A buyer faces a heavy burden when it attempts to invoke a material adverse effect clause in order to avoid its obligation to close. Many commentators have noted that Delaware courts have never found a material adverse effect to have occurred in the context of a merger agreement. This is not a coincidence.

Id. at 738. It is fair to say that the courts have not offered a clear explanation for their hostility, which leaves two very interesting puzzles which would well warrant the attention of contract theorists who wish to engage with the real world of contracting. First, why is the court so reluctant to select a proxy for the occurrence of a MAC that does not, in effect, reduce to the search for a unicorn? We speculate that the courts view the standard chosen by the acquisition bar as “empty” – that is, giving the court no guidance at all about the proper proxy – and therefore causing the courts to decline to allow sophisticated lawyers and parties to entirely turf the matter to the court. Second, whatever the reason for the courts inaction, the fact that sophisticated lawyers and parties continue to contract in the same way even knowing that courts will not take the MAC clause seriously requires explanation, especially because it would not be difficult to reduce the MAC either to a series of rules or give the court more

One more step was necessary, however, to complete the allocation of post-execution exogenous risk to Hexion; the agreement had to address the fact that changes in general economic and industry conditions also could affect the closing of the transaction through the availability of financing. As we have seen, this was addressed by the elimination of a financing condition. But fully protecting Huntsman from the risk of exogenous change presented a serious problem. Without more, Hexion had an unqualified option not to close the acquisition exercisable by a \$325 million payment if it could not obtain financing. If events increased financing costs by more than \$325 million, Hexion would renegotiate and Huntsman, having made transaction specific investment or suffered transaction specific competitive costs, would be at a disadvantage. The puzzle then was how to encourage Hexion to work with Huntsman to develop strategies that would improve the post-transaction value of the combined entity so that financing could be obtained and the transaction closed. Otherwise, the transaction might not be entered into in the first place.

This was accomplished by a formal obligation to collaborate in good faith. Section 5.12(a) of the acquisition agreement inelegantly obligated Hexion “to use its reasonable best efforts to take, or cause to be taken, all actions and to do, or cause to be done, all things necessary, proper or advisable to arrange and consummate the Financing on the terms and conditions described in the Commitment Letter” In turn, this commitment was given teeth. Hexion could not simply ignore the obligation because the \$325 million damage cap did not apply to a knowing and intentional breach of any of Hexion’s covenants under the acquisition agreement, most particularly, its obligation to use its best efforts to secure financing.

Thus, the acquisition agreement supported Huntsman’s pre-closing transaction specific investment by assuring that Hexion would have to act in good faith to secure financing; and so long as it met this formal obligation, Hexion could terminate the transaction by paying \$325 million. This structure should have given Hexion the incentive to invest together with Huntsman: to bring to bear both parties’ specialized knowledge and experience in the effort to

guidance about the choice of a standard. Put differently, why do sophisticated parties write less complete contracts when they plainly can write more complete contracts? In a very interesting paper, Patrick Bolton and Antoine Faure-Grimaud have begun analysis of the problem. See Patrick Bolton & Antoine Faure-Grimaud, “Satisficing Contracts” NBER Working Paper No. w14654 (January 2009). NBER Working Paper No. w14654. Available at SSRN: <http://ssrn.com/abstract=1329272>, available at SSRN: <http://ssrn.com/abstract=1329272> .

save the transaction should a financing problem develop. If these efforts failed to persuade Hexion that, despite the availability of financing, it should make the acquisition, or if financing ultimately turned out not to be available, then Hexion could terminate the transaction by paying \$325 million. But if Hexion instead behaved very badly – that is, if it knowingly and intentionally breached its obligation to try to secure financing to close the transaction – then its liability for breach of the covenant was uncapped.¹⁵³

The fit of the *Huntsman* court’s approach with the need for cooperative concurrent investment appears from the court’s recitation of what Hexion should have done:

“Sometime in May 2008, Hexion apparently became concerned that the combined entity, after giving effect to the merger agreement and the commitment letter, would be insolvent. At that time a reasonable response to such concerns might have been to approach Huntsman’s management to discuss the issue and potential resolutions of it. This would be particularly productive to the extent that such potential insolvency problems rested on the insufficiency of operating liquidity, which could be addressed by a number of different ‘levers’ available to management.” This is not what management did.”¹⁵⁴

Then, speaking to a later point in time, the court again stressed Hexion’s refusal to engage Huntsman in a cooperative effort to address the problem.

“[Having had ‘a justifiable good faith concern’ that it would not be able to provide the necessary solvency certificate, and that the bank financing pursuant to the commitment letter might be imperiled, Hexion was then clearly obligated to approach Huntsman management to discuss the appropriate course to take to mitigate these concerns.

¹⁵³ The court set out in great detail the facts supporting its conclusion that Hexion had breached its obligation to use its best efforts to secure financing. Central to its conclusion was that from the first moment Hexion concluded that exogenous changes, which the court held did not amount to a material adverse change even without reference to the carve outs from the definition of a MAC, had reduced the likely post-transaction value of Huntsman and so caused Hexion not to wish to close the transaction, Hexion directed its lawyers to establish a legal basis for its desired non-performance, including securing an unfavorable solvency opinion and circulating that opinion to the banks who had issued the financing commitment, all without notice to Huntsman and with the knowledge that doing so would make securing financing unlikely. 965 A. 2d at ___.

¹⁵⁴ 965 A. 2d at ___.

... But Hexion did nothing to approach Huntsman management, either to discuss ways the solvency problems might be addressed, or even to put Huntsman on notice of its concerns. This choice alone would be sufficient to find that Hexion had knowingly and intentionally breached its covenants under the merger agreement.”¹⁵⁵

Thus, the court in *Huntsman* construed the best efforts obligation in Section 5.12(a) to require a good faith exchange of information about the progress and prospects of their joint search for financing. It is this information sharing regime that “braids” the formal and informal elements of the contract and endogenizes trust. But, importantly, the formal enforcement of the cooperative regime was low powered because if a good faith effort were made, Hexion could elect not to close subject only to paying the damage cap. Formal enforcement – that is, uncapped damages – was available only in the limited circumstance where Hexion behaved very badly by intentionally breaching its obligation to use its best efforts in securing financing. This condition, whose satisfaction was entirely under Hexion’s control and was both observable and verifiable, likely would not give rise to the crowding out phenomenon that undermines informal enforcement.

Indeed, the court in *Huntsman* was quite sensitive to the danger of crowding out. The court repeatedly emphasized that the remedy was only to require Huntsman to comply with its covenants – to seek to secure financing – rather than granting the equivalent of expectation damages by ordering Hexion to close the acquisition and awarding expectation damages when it could not.¹⁵⁶ The parties’ understanding of the remedial limits of low-powered enforcement was reflected in the terms by which the litigation ultimately was settled and the transaction allowed to die. Huntsman received cash in the amount of \$750 million, made up of the \$325 million

¹⁵⁵ Id. at ____.

¹⁵⁶ “[T]he court finds that, under the agreement, Huntsman cannot force Hexion to consummate the merger, but that Huntsman is entitled to a judgment ordering Hexion to specifically perform its other covenants and conditions. 865 A.2d at 759.

termination fee that should have been paid, and \$450 million to settle tort claims that Hexion had disparaged Huntsman by asserting its insolvency.¹⁵⁷

In short, the *Huntsman* court, much like the courts that protect specific investment in preliminary agreements by enforcing good faith obligations, used low-powered enforcement of a formal obligation in order to support the specific investments necessary to collaborative innovation. While the context and the technology associated with the innovation in these settings is radically different than the high technology supply transactions we discussed in our prior article, the braiding strategy, and the complementary use of formal and informal enforcement strategies, plainly appears.

What is missing from *Huntsman*, however, is a clear statement of the theory that underpins the court's analysis: the same omission that, as we show below, undermines complementary enforcement of formal and informal contracting in the preliminary agreement context. To be sure, the court got it right in this case, but providing guidance both to transacting parties as to how to craft their braiding strategies, and to other courts in how to support those strategies, requires an explicit conceptual framework. We offer that framework here: a braiding of formal and informal enforcement avoids the crowding out risk by legally enforcing only the commitment to collaborate that is necessary to stimulate the growth of trust. We can underscore the importance of a theoretical framework by pointing to the differences between the braiding mechanisms created by parties contracting for technological innovation and those created by courts giving content to the duty of good faith. In the former case, parties have created the governance structures we explored in Part II following an extensive learning process of trial and error. In the latter case, the courts lack comparable experience; they require a theory. In the following discussion, we look in detail at how courts may misdirect their efforts, with potentially disruptive effects on the conditions for innovative collaboration under uncertainty, when they have none.

¹⁵⁷ In addition, Hexion's controlling shareholder agreed to purchase \$250 million in Huntsman preferred stock that would be redeemed in 10 years. *Hexion vs. Huntsman: the Settlement, M&A Litigation commentary*, available at <http://mandalitigationcommentary.blogspot.com/2008/12/hexion-v-huntsman-settlement.html>.

D. The Doctrine Unmoored: Letters of Intent and the Duty to Negotiate in Good Faith

As suggested earlier in this Part, the pattern of preliminary agreements that contemplate concurrent investments in a relationship that stretches out over time can also be seen in the context of corporate acquisitions.¹⁵⁸ We turn now to several cases that illustrate this pattern. They also illustrate the adverse consequences when courts fail to understand the interaction of formal and informal enforcement.

1. Tan v. Allwaste, Inc.

Tan v. Allwaste, Inc., involved a claim by shareholders of Geotrack that Allwaste had breached an obligation to negotiate in good faith the acquisition of all of Geotrack's outstanding stock. Discussions between Allwaste and Geotrack had led to the parties executing a letter of intent that stated Allwaste's intention to make the acquisition subject to satisfactory due diligence. The letter of intent also stated that it "does not constitute a binding agreement among the parties" and further stated that, according to the court, "the parties do not have a deal until a formal agreement was executed." However, the letter did contain some binding obligations. It bound the parties to pursue a deal in good faith and contained a "no shop" clause by which Geotrack promised not to shop Allwaste's stock offer to other potential buyers. During the due diligence investigation, Allwaste discovered Geotrack had not remitted payroll and withholding taxes to the Internal Revenue Service for some time. Allwaste withdrew from further negotiations and was unwilling to buy Geotrack even after it offered to lower the price.

This preliminary acquisition agreement can be fairly characterized as an innovative effort to secure the synergies that might arise from combining the Allwaste and Geotrack businesses, whose success depends on both parties investing in the proposed project concurrently. Here the buyer invests in information costs (due diligence) to determine the actual condition of Geotrack's business and to develop the information necessary to assess the potential for synergy and the difficulty that may be associated with actually achieving it. In turn, this investment is protected by a no shop clause: the seller cannot use the fact of Allwaste's interest to induce other buyers to

¹⁵⁸ They may also be seen in other capital-related transactions. For discussion of braiding in a venture capital context, see Gilson, *Engineering a Venture Capital Market*, supra note 3 at --.

enter a competing bid and thereby devalue Allwaste's investment in information. Thus, Geotrack makes an opportunity cost investment and incurs the potential costs of running the business without change and subject to its competitors' actions,¹⁵⁹ while Allwaste undertakes its investigation.¹⁶⁰ Concurrent investment and the passage of time together will show whether a profitable project exists, at which time the parties would be free to write a contract to complete the acquisition if the underlying innovation were feasible.

In this case, the court correctly held that the letter agreement was a preliminary agreement obligating Allwaste to negotiate further in good faith with Geotrack: in our terms, this was a low powered formal obligation that supported the concurrent investment that was necessary to get the parties to the point where they could assess whether synergy gains could be captured and then decide whether to complete a transaction. However, the court went a step further by also concluding that there was sufficient evidence for a reasonable jury to conclude that, although the target had failed to disclose that it had not paid its payroll and withholding taxes for some time, Allwaste had declined to go forward with the deal for reasons that were unrelated to Geotrack's actions, omissions, or financial status.¹⁶¹ On this basis, the court concluded that the case would go to a jury to determine whether Allwaste had breached its obligation to negotiate in good faith because it may have declined to go forward with the transactions for reasons unrelated to the target's misbehavior.¹⁶²

¹⁵⁹ See note ___ supra (discussing risk to seller of competitors actions between the execution and closing of an acquisition).

¹⁶⁰ Sellers in these acquisition agreements may also invest in the synergies that result from integration. See Gilson & Schwartz, *Understanding MACs*, supra note ---.

¹⁶¹ In particular, plaintiffs noted the acquisition of Geotrack was to be debt free, so Geotrack's tax liability should not have affected Allwaste's analysis of the deal. Plaintiffs also provided evidence that Allwaste simply decided not to conduct any more acquisitions. 1997 WL 337207 at ---. However, Allwaste might well have concluded that a counterparty that lied about its liabilities may have been lying about other matters, such as the condition of its assets or the non-debt aspects of its financial condition that a debt free acquisition would not protect against.

¹⁶² The court appears to have concluded that if Allwaste declined to go forward with the acquisition because it "simply decided not to conduct any more acquisitions", id. at ___, a jury could conclude that it breached its preliminary agreement. In other words, the court construed the obligation as prohibiting a change in one party's strategy.

Under these circumstances, exposing Allwaste to the threat of a jury finding a bad faith failure to negotiate transforms the preliminary agreement from a low powered formal enforcement tool that supports the diligence process necessary to assessing the potential for innovation, to a high powered sanction that exposes Allwaste to large damages from not making the acquisition.¹⁶³ There was no allegation that Allwaste had not made its preliminary investment in assessing the potential of the acquisition; it had paid the price for its option. Rather, Geotrack alleged that Allwaste had merely concluded that the acquisition was no longer advantageous, which the court concluded would be a breach. So expansive an interpretation of the good faith obligation and the expansion of the role of formal enforcement goes much further than the low-powered enforcement associated with a braiding strategy, which contemplates only that each party is held to making the preliminary investments necessary to assessing the acquisition, but neither is obligated to close the transaction. More concretely, a braiding strategy does not envision that a letter of intent shifts the risk of changes in general economic conditions or the potential buyer's circumstances or strategy to the buyer. Such an expansion of formal enforcement is precisely the shift in the relative importance of formal and informal enforcement that, as developed in Part I, is associated with crowding out the development of informal patterns of cooperation that are necessary to exploit the potential for innovation in the first place. The court in *Tan v. Allwaste* unwisely departed from the kind of low powered enforcement that is most likely to create an effective braiding mechanism, and thereby restricted the range of contractual techniques available to parties seeking to innovate.

2. VS & A Communications and Venture Associates

The potentially dysfunctional reasoning and result in *Tan v. Allwaste* is not simply an example of a single judge getting it wrong. The impact of the absence of a theoretically sound principle to guide judicial enforcement of a letter of intent can be seen by comparing the efforts of two distinguished jurists confronting this problem – then Delaware Chancellor William T. Allen, and then Chief Judge Richard Posner of the United States Court of Appeals for the Seventh Circuit. Both in the end reach the right result, but Chancellor Allen inflicted on the

¹⁶³ The court did not limit potential damages to Geotrack's reliance costs, thus leaving open the possibility that Allwaste could be held to benefit of the bargain damages.

defendant a costly trial which he later acknowledged was unnecessary,¹⁶⁴ and Judge Posner, albeit in dicta, held out the possibility that the measure of damages for breach of an obligation to negotiate in good faith contained in a letter of intent might extend to expectation damages.¹⁶⁵

In *VS & A Communications*, Chancellor Allen considered the claim that an obligation to negotiate in good faith contained in a letter of intent concerning an acquisition in effect required to seller to close the transaction on terms that the buyer alleges the seller could not in good faith have rejected.¹⁶⁶ While the facts that give the buyer's position at least surface plausibility are complicated, Chancellor Allen's framing of the issue is not:

In my opinion [the letter of intent] does create an implied obligation to keep the Stations off the market and not to offer to sell or negotiate with others concerning the sale. In addition, [the buyer] was obligated to continue to assist the negotiation process in specific ways: to afford information, for example. These obligations are real and they would have value to one negotiating to buy the Stations. But the obligation ... does not go so far as to constitute a concession from the seller of its right as a property owner to change its mind ... prior to the time it agrees to bind itself legally to a sale.

....

Markets change. Negotiating a complex transaction is always subject to the risk that a material change in a relevant market will suddenly make a proposed deal uneconomic from one side of the transaction or the other. That risk inevitably exists until a party is legally bound.¹⁶⁷

Thus, Chancellor Allen reaches a conclusion that is consistent with low-powered enforcement of a braiding strategy and the avoidance of a crowding out result. However, it is important to keep in mind that Chancellor Allen was writing a post-trial opinion. As he said, "It may be that, taking the view of this case that I now do, it would have been permissible to grant

¹⁶⁴ *VS & A Communications Partners, L.P. v. Palmer Broadcasting Limited Partnership*, 1992 WL 339377 (Del.Ch. 1992).

¹⁶⁵ *Venture Associates Corporation v. Zenith Data Systems Corporation*, 96 F. 3rd 275 (7th Cir. 1996).

¹⁶⁶ The case is unusual in that typically it is the buyer who elects not to go forward.

¹⁶⁷ 1992 W.L. 339377 at 8.

summary judgment of dismissal to defendants. That course would have saved the substantial effort and expense entailed in the trial that has now been completed.”¹⁶⁸

The risk of trial, especially trial to a jury as opposed to the bench trial found in the Delaware Chancery Court, becomes especially significant if the potential damage remedy extends not just to reliance damages, the amount of one party’s preliminary investment, but also to benefit of the bargain damages, the profits the party would have earned had the acquisition actually been completed. And here is where Judge Posner’s opinion in *Venture Associates Corporation*¹⁶⁹ becomes relevant.

Judge Posner correctly concludes, as did Chancellor Allen, that an obligation to negotiate in good faith does not constrain a party from changing its view of the desirability of an acquisition in light of a change in conditions:

“Since [the seller] had not agreed on the sale price, it remained free to demand a higher price in order to reflect the market value of the company at the time of the actual sale. ... [The seller] was free to demand as high a price as it thought the market would bear, provided that it was not trying to scuttle the deal... If the market value ... rose..., to say to \$25 million, [the seller] would not be acting in bad faith to demand that amount from [the buyer] even if it knew that [the buyer] would not go that high. [The seller] would be acting in bad faith only if its purpose in charging more than {the buyer} would pay was to induce [the buyer] to back out of the deal.”¹⁷⁰

Consistent with proper judicial enforcement of a braiding strategy, a party is not committed to exercising the option to close the transaction.

However, the risk of trial becomes a serious threat to crowd out informal contracting, even if the charge to the jury is correct, if the potential damages are calculated in terms of a

¹⁶⁸ Id. at 2.

¹⁶⁹ *Venture Associates Corporation v. Zenith Data Systems Corporation*, 96 F. 3rd 275 (7th Cir. 1996).

¹⁷⁰ 96 F. 3rd at 279-80. Judge Posner does not address the broader point made by Chancellor Allen that the changed conditions that have affected the price would allow the seller in good faith simply to decline to complete the transaction.

breach of an obligation to pursue the ultimate deal.¹⁷¹ And here, Judge Posner expresses the view that the threat is real: “[d]amages for breach of an agreement to negotiate may be, although they are unlikely to be, the same as the damages for breach of the final contract that the parties would have signed had it not been for the defendant’s bad faith.”¹⁷² The difficulty with Judge Posner’s invitation to courts to award expectation damages is that it blurs the separation between the braided portion of the contract and the incentive portion, thereby increasing the risk of crowding out.

The conclusion in *Tan v. Allwaste* that a party who has made the contemplated preliminary investment cannot simply decline to close the transaction, together with Chancellor Allen’s subjecting such a party to trial and Judge Posner’s holding out the possibility that the party might be subject to expectation damages premised on a breach of the final contract, illustrates the importance of a theory to explain the underlying commercial behavior and prescribe the appropriate facilitative role for courts. No matter how sharp are the intuitions of experienced judges, courts unguided by a theoretical framework are prone to err. Thus, in each case discussed above, the court failed to embrace fully the notion that an enforceable preliminary agreement only requires a party to pay the option price by undertaking the promised investment in acquiring and sharing information. Framing the obligation in this way should permit a party to properly obtain a summary judgment even though it walks away from the transaction for reasons wholly unrelated to the actions of the counterparty. And, even if the promised investment is not made, the defendant’s liability is properly limited to the investment cost and not to the expectancy that might result from a concluded deal.

E. How Courts Can Know Braiding When They See It

Two broad themes emerge from the preceding discussion of the evolving case law governing braided contracts. First, it is clear that the duty to negotiate in good faith in preliminary

¹⁷¹ See TAN __ supra.

¹⁷² Id. at 278.

agreements and corporate acquisition transactions provides a useful doctrinal placeholder permitting courts to imply a governance structure to support agreements that rely principally on iterative investments in information. This emerging doctrine is compatible with the outcomes in cases such as *Lilly v. Emisphere* and *FTC v. Intel* that imposed carefully calibrated sanctions to deter willful cheating on the obligation to exchange information in pharmaceutical and platform production collaborations. Second, we also see that when courts lack sufficient normative guidance, they will sometimes expand the legal sanction from low to high power and thereby risk crowding out the very informal enforcement arrangements that braided good faith obligations are designed to support. To avoid this risk, courts must be able to determine when the parties have undertaken a braiding obligation and what formal duties that obligation entails.

The new obligation to negotiate in good faith is unmoored because the cases do not indicate what the parties are supposed to bargain over, or when the refusal to agree constitutes bad faith, or just what should be the remedy for bad faith. Under contemporary legal doctrine, for example, the question of when preliminary agreements should be enforced requires a multi-factor analysis that invokes the language of the agreement, the existence and number of open terms, the extent of any reliance investments, and the customary practice regarding formalities. The court, in addition, is required to consider the context of the negotiations resulting in the preliminary agreement.¹⁷³ A laundry list of relevant factors leaves the decision process largely obscure. That is particularly the case when courts fail to attach weights to the factors or specify the relationship among them.¹⁷⁴ In the absence of any theory, the courts are left to interpret criteria for imposing liability that are unconnected to the operative facts that might justify formal enforcement. Our theory of how courts can best support the braiding of formal and informal contracting provides a coherent way to think about the domain and limits of the obligation to negotiate in good faith: Courts can best respond to the challenge of searching for partners in uncertain environments by imposing low-powered sanctions designed to encourage compliance with the information exchange regime (and the informal relations it supports) while avoiding sanctions that incentivize the strategic behavior that crowds out informality and destroys the

¹⁷³ See *TIAA v. Tribune*, 670 F. Supp. at 500-02.

¹⁷⁴ Schwartz & Scott, *supra* note – at 675-6.

braided. In short, the duty to negotiate in good faith means that parties should be held to their commitment to make initial investments in collaboration and nothing else.¹⁷⁵

Despite the misleading rhetoric of the doctrinal commitment to negotiate in good faith, our theory shows that parties to braided contracts do not need to bargain at all. Rather, a party need only do that which it promised to do in the initial agreement-- to invest and collaborate. Thereafter, each party faces a choice whether or not to proceed to a fully enforceable, formal obligation. The key to understanding the nature of low-powered sanctions, therefore, is to recognize that an obligation to collaborate is not an obligation to bargain. Whenever a court holds, to the contrary, that the dissenting party has an obligation to bargain in good faith, then it follows that there must be a state of the world in which failing to reach agreement is a breach. It is precisely that trap that led the court in *Tan v. Allwaste* and Judge Posner in *Venture Associates* to err.

CONCLUSION

In this article, we examined the interaction of formal and informal contracting and enforcement at the level of the transaction. We argue that across important areas of innovative activity, linking formal and informal strategies is complementary. Formal contracting does not crowd out the informal strategy. Combined in an information-exchange regime that itself joins attributes of formality and informality, the two strategies together render tractable problems that neither can address alone. The braiding of the two strategies that we observe in practice makes the level of trust endogenous to the collaborative relation, allowing the contract to support levels of joint innovation that cannot be sustained by other techniques. Here, we offer the conceptual framework for what contracting parties have developed intuitively, with the hope that courts, who lack the contracting parties' opportunity to learn directly and continuously from experience, can use that framework to provide the low level formal enforcement that a braiding strategy requires.

¹⁷⁵ Our principal concern has been the question of what it means to formally enforce these preliminary obligations. But, as noted above, the criteria for determining *when* parties have reached such an agreement are also needlessly vague. See note -- *supra*. Since parties are always free to indicate their desire to be completely free from formal enforcement, courts should hold all commercial parties to an obligation to invest as promised whenever they agree to invest collaboratively in a letter of intent or other similar form of transaction.

While we have focused here on braiding at the micro level of cooperation among individual agents, we close by noting that the debate over the interaction between formal and informal strategies at the macro – society -- level has been a constant feature of social debate, beginning with Durkheim’s demonstration in the late 19th century that contract supposes and depends on a rich background of social norms to stabilize the parties’ expectations and to guide legal interpretations of their obligations.¹⁷⁶ Since then social theorists such as Polanyi and Bell,¹⁷⁷ among many others, have expressed concern that the experience of self-seeking in market exchange would ultimately undermine the values of reciprocity and solidarity on which the function of markets in the end arguably depends—a secular, social or macro- version of crowding out. Could it be that braiding – the complementary use of formal and informal strategies – and the class of problems it addresses are fractal, repeating themselves from larger to smaller across a broad range of human interaction, and so providing a mechanism by which the social cooperation too is endogenized and renewed even as the conditions of cooperation become more uncertain?

¹⁷⁶ See e.g., EMILE DURKHEIM, *THE DIVISION OF LABOR IN SOCIETY* 211-16 (George Simpson trans., 1964):

But it is not only outside of contractual relations, it is in the play of these relations themselves that social action makes itself felt. For everything in the contract is not contractual. The only engagements which deserve this name are those which have been desired by the individuals and which have no other origin except in this manifestation of free will. Inversely, every obligation which has not been mutually consented to has nothing contractual about it. But wherever a contract exists, it is submitted to regulation which is the work of society and not that of individuals, and which becomes ever more voluminous and more complicated.... To be sure, when men unite in a contract, it is because, through the division of labor, either simple or complex, they need each other. But in order for them to co-operate harmoniously, it is not enough that they enter into a relationship, nor even that they feel the state of mutual dependence in which they find themselves. It is still necessary that the conditions of this co-operation be fixed for the duration of their relations.

For a contemporary variant see J. BECKERT, R. DIAZ-BONE, ET AL. *MÄRKTE ALS SOZIALE STRUKTUREN* (2007).

¹⁷⁷ See note --- supra.