

## ARTICLES

### 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 and informal contract enforcement. The theoretical 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” the operation of informal contracting. Both literatures focus too narrowly on how formal contracts create incentives for parties to perform substantive actions, while assuming that informal enforcement depends on preexisting levels of trust. As a result, current scholarship misses the relationship between formal and informal contract mechanisms that characterizes contemporary contracting in practice. Parties respond 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 increasing uncertainty. In each instance, courts appear to have harnessed the braiding phenomenon by using low-powered sanctions to protect formal contractual “preliminaries.”*

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\* Marc and Eva Stern Professor of Law and Business, Columbia University; Charles J. Meyers Professor of Law and Business, Stanford University; European Corporate Governance Institute.

\*\* Maurice T. Moore Professor of Law, Columbia University.

\*\*\* Alfred McCormack Professor of Law and Director, Center for Contract and Economic Organization, Columbia University.

This Article was improved by helpful comments on earlier drafts from Yochai Benkler, Patrick Bolton, Albert Choi, Mitu Gulati, Gillian Hadfield, Michael Klausner, Michael Knoll, Jody Kraus, Jonathan Rose, David Snyder, George Triantis, Bill Whitford, and Noriyuki Yanagawa, and from participants at the Columbia Law School faculty workshop, faculty workshops at Virginia, N.Y.U., American, and Duke Law Schools, and at the October 2009 Conference on Business Law and Innovation in Tokyo, Japan sponsored by Hitotsubashi University, RIETI, Waseda University, and the Kauffman Foundation.

*This technique allows potential collaborators to explore and develop their relations, but it does not impose mutually enforceable obligations to pursue a particular project. Despite the wisdom of temperate enforcement of braided contracts, however, courts that emphasize the contemporary duty to negotiate in good faith are often tempted to expand the legal sanction. We conclude 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 between formal and informal contract enforcement. Traditional analysis envisions contracting parties choosing between two modes of encouraging performance of obligations and enforcing those obligations in the event of nonperformance. Parties may choose by formal contract to enlist 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, performance is encouraged and breach penalized by the cancellation of expected future dealings with the counterparty, by the loss of reputation (with the resulting reduction in future business with other potential counterparties in the relevant economic and social communities), or by an individual disposition toward reciprocity (and thus a willingness to reward cooperation and punish defection).

A burgeoning contract theory literature recognizes the distinction between the two enforcement strategies, but the two main strands of the literature approach them 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 trade,<sup>1</sup> or in the alternative, on how reputa-

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1. See, e.g., Aaron S. Edlin & Stefan Reichelstein, Holdups, Standard Breach Remedies, and Optimal Investment, 86 *Am. Econ. Rev.* 478, 478 (1996) ("We investigate when simple fixed-price contracts, enforced with standard legal breach remedies, can provide efficient investment incentives. Our analysis reveals circumstances where contractually specified renegotiation processes are not necessary."); Sanford J. Grossman & Oliver D. Hart, The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration, 94 *J. Pol. Econ.* 691, 692 (1986) ("We develop a theory of integration based on the attempt of parties in writing a contract to allocate efficiently the residual rights of control between themselves."); Oliver D. Hart & John Moore, Property Rights and the Nature of the Firm, 98 *J. Pol. Econ.* 1119, 1120 (1990) (arguing that ownership of residual rights characterizes difference between intra- and interfirm transactions); Benjamin E. Hermalin & Michael L. Katz, Judicial Modification of Contracts Between Sophisticated Parties: A More Complete View of Incomplete Contracts and Their Breach, 9 *J.L. Econ. &*

tional constraints and the discipline of repeated dealings can secure voluntary enforcement when formal enforcement is ineffective.<sup>2</sup> Both lines of analysis, however, pay scant attention to the relationship between the two types of enforcement, and particularly to how reliance on one type interacts with reliance on the other.<sup>3</sup>

By contrast, a rich experimental literature explicitly considers the interaction between formal and informal enforcement.<sup>4</sup> The central ques-

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Org. 230, 231 (1993) (focusing “on contracts that are privately optimal *given the information available to the parties at the time of signing*”); Jean Tirole, *Incomplete Contracts: Where Do We Stand?*, 67 *Econometrica* 741, 744 (1999) (describing “sufficient conditions under which the indescribability of contingencies does not restrict the set of payoff outcomes that can be achieved through contracting between parties”).

2. See, e.g., Benjamin Klein, *Why Hold-Ups Occur: The Self-Enforcing Range of Contractual Relationships*, 34 *Econ. Inquiry* 444, 444 (1996) (“Because private enforcement capital is limited and written contract terms are necessarily imperfect, transactors must optimally combine court-enforced written terms together with privately enforced unwritten terms to define what I call the self-enforcing range of their contractual relationship.”); Janet T. Landa, *A Theory of the Ethnically Homogeneous Middleman Group: An Institutional Alternative to Contract Law*, 10 *J. Legal Stud.* 349, 349 (1981) (examining “how . . . traders cope with the problem of contract uncertainty in an environment where the legal framework is nonexistent or poorly developed”); Robert E. Scott, *Conflict and Cooperation in Long-Term Contracts*, 75 *Calif. L. Rev.* 2005, 2039–49 (1987) [hereinafter Scott, *Conflict and Cooperation*] (discussing how, where “the intervals between adjustment choices and the levels of reward and punishment vary[,] . . . parties must turn to supplemental enforcement systems in order to maintain the relative advantages of long-term cooperation over short-term evasion”). For an excellent survey of early informal enforcement mechanisms, see Avner Greif, *Informal Contract Enforcement: Lessons from Medieval Trade*, in 2 *The New Palgrave Dictionary of Economics and the Law* 287, 287–88 (Peter Newman ed., 1998).

3. For exceptions, see Robert E. Scott & Paul B. Stephan, *The Limits of Leviathan: Contract Theory and the Enforcement of International Law* 88–109 (2006) [hereinafter Scott & Stephan, *Limits of Leviathan*] (discussing rivalrous relationship between formal and informal enforcement in international law); George Baker, Robert Gibbons & Kevin J. Murphy, *Relational Contracts and the Theory of the Firm*, 117 *Q.J. Econ.* 39, 39 (2002) (explaining that “[e]ven ostensibly formal processes such as compensation, transfer pricing, internal auditing, and capital budgeting often cannot be understood without consideration of their associated informal agreements”); Ronald J. Gilson, *Engineering a Venture Capital Market: Lessons from the American Experience*, 55 *Stan. L. Rev.* 1067, 1076–92 (2003) [hereinafter Gilson, *Engineering a Venture Capital Market*] (examining mixed formal and informal contracting in venture capital); Robert E. Scott, *A Theory of Self-Enforcing Indefinite Agreements*, 103 *Colum. L. Rev.* 1641, 1675–92 (2003) [hereinafter Scott, *Self-Enforcing Indefinite Agreements*] (discussing relationship between formal and informal enforcement of deliberately indefinite agreements); George Baker, Robert Gibbons & Kevin J. Murphy, *Contracting for Control 2* (May 14, 2006) (unpublished manuscript), available at [http://www.stanford.edu/group/SITE/archive/SITE\\_2006/Web%20Session%206/Gibbons.pdf](http://www.stanford.edu/group/SITE/archive/SITE_2006/Web%20Session%206/Gibbons.pdf) (on file with the *Columbia Law Review*) (modeling allocation of decision rights in ways that support relational contracting).

4. See, e.g., Martin Brown, Armin Falk & Ernst Fehr, *Relational Contracts and the Nature of Market Interactions*, 72 *Econometrica* 747, 759–75 (2004) [hereinafter Brown, Falk & Fehr, *Relational Contracts*] (contrasting long-term effects of formal and informal contract enforcement on market interactions); Ernst Fehr & Klaus M. Schmidt, *Adding a Stick to the Carrot? The Interaction of Bonuses and Fines*, 97 *Am. Econ. Rev.* 177, 180 (2007) (showing through experiments that “[a]dding a stick (the fine) to a carrot (the

tion 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 without reputational implications.<sup>5</sup> In such a case, the two enforcement strategies are substitutes. Alternatively, the two strategies are complements when each reinforces the effectiveness of the other. Thus, an explicit contract that covers most but not all of the parties’ obligations is complementary if the remaining obligations are enforced informally and the contract as a whole is workable. The experimental literature provides much evidence of substitution, but much less of complementarities.<sup>6</sup>

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bonus) has adverse incentive effects that may render a pure bonus contract more efficient than a combined contract”); Ernst Fehr, Alexander Klein & Klaus M. Schmidt, *Fairness and Contract Design*, 75 *Econometrica* 121, 122 (2007) (discussing experiments indicating “that the principals’ contract choices differ from those predicted by the self-interest model because concerns for fairness strongly affect the incentive properties of the contracts”); see also Gary Charness, *Responsibility and Effort in an Experimental Labor Market*, 42 *J. Econ. Behav. & Org.* 375, 375 (2000) (demonstrating through experiments that “shifting responsibility for an outcome to an external authority dampens internal impulses toward honesty, loyalty, or generosity”); Ernst Fehr, Georg Kirchsteiger & Arno Riedl, *Gift Exchange and Reciprocity in Competitive Experimental Markets*, 42 *Eur. Econ. Rev.* 1, 3 (1998) (arguing “sellers’ reciprocal behaviour need not be considered as irrational if one allows for interdependent preferences”); Ernst Fehr & Klaus M. Schmidt, *Theories of Fairness and Reciprocity: Evidence and Economic Applications*, in 1 *Advances in Economics and Econometrics: Theory and Applications*, Eighth World Congress 208, 210–11 (Mathias Dewatripont, Lars Peter Hansen & Stephen J. Turnovsky eds., 2003) [hereinafter Fehr & Schmidt, *Fairness and Reciprocity*] (“Compliance with contractual obligations . . . is strongly shaped by the perceived fairness of the allocation of material benefits and by issues of procedural justice.”); Ernst Fehr & Armin Falk, *Wage Rigidity in a Competitive Incomplete Contract Market*, 107 *J. Pol. Econ.* 106, 112 (1999) [hereinafter Fehr & Falk, *Wage Rigidity*] (showing through experiments “that workers in fact choose low effort levels in response to low wages, although this is costly for them, and . . . this gives rise to downward wage rigidity”); Simon Gächter & Armin Falk, *Reputation and Reciprocity: Consequences for the Labour Relation*, 104 *Scandinavian J. Econ.* 1, 7–18 (2002) [hereinafter Gächter & Falk, *Reputation and Reciprocity*] (investigating interaction effects of reciprocity and repeated game incentives).

5. Justice Holmes is credited with the classic statement that contract law is best understood as giving the promisor an option between performing his promise or breaching and paying compensatory damages:

Nowhere is the confusion between legal and moral ideas more manifest than in the law of contract. Among other things, here again the so called primary rights and duties are invested with a mystic significance beyond what can be assigned and explained. The duty to keep a contract at common law means a prediction that you must pay damages if you do not keep it,—and nothing else.

Oliver Wendell Holmes, *The Path of the Law*, 10 *Harv. L. Rev.* 457, 462 (1897).

6. Compare the studies finding evidence of crowding out, including Iris Bohnet, Bruno S. Frey & Steffen Huck, *More Order with Less Law: On Contract Enforcement, Trust, and Crowding*, 95 *Am. Pol. Sci. Rev.* 131, 132 (2001) (“At intermediate levels [of enforcement], honesty is crowded out; more second movers breach, and resources are wasted in trials.”), Edward L. Deci, Richard Koestner & Richard M. Ryan, *A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation*,

For all of their vibrancy, the theoretical 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 rely on important skills from outside the firm. In diverse industries ranging from contract manufacturing to supply chain contracts between manufacturers and suppliers to pharmaceutical collaborations, parties are agreeing to innovate jointly.<sup>7</sup> These parties write contracts that intertwine elements of formal and informal contracting in a way that allows the parties to assess each other's disposition and capacity to respond cooperatively and effectively to unforeseen circumstances.<sup>8</sup> In these contracts, 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 such contracts share a common focus: collaborative innovation in a world of heightened uncertainty.<sup>9</sup>

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125 Psychol. Bull. 627, 659 (1999) (“[R]eward contingencies undermine people’s taking responsibility for motivating or regulating themselves.”), Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 J. Legal Stud. 1, 3 (2000) (arguing “the introduction of the fine changes the perception of people regarding the environment in which they operate,” but does not necessarily reduce penalized behavior), Daniel Houser, Erte Xiao, Kevin McCabe & Vernon Smith, *When Punishment Fails: Research on Sanctions, Intentions and Non-Cooperation*, 62 Games & Econ. Behav. 509, 522 (2008) [hereinafter Houser et al., *When Punishment Fails*] (“Credible threats of sanctions often failed to produce cooperative behavior, and our evidence is that incentives, not intentions, underlie this effect.”), and Ernst Fehr & Simon Gächter, *Do Incentive Contracts Crowd Out Voluntary Cooperation?* 26 (Ctr. for Econ. Policy Research, Discussion Paper No. 3017, 2001) [hereinafter Fehr & Gächter, *Crowd Out*], available at <http://ssrn.com/abstract=289680> (on file with the *Columbia Law Review*) (“This paper shows that reciprocity-driven voluntary cooperation may indeed be crowded out by incentive contracts.”), with several studies finding complementarity, including Sergio G. 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, 290 (2004) (“[L]ow-cost contracts are important mechanisms to support cooperation when it is not very likely that parties will continue transacting in future periods.”), and Mary Rigdon, *Trust and Reciprocity in Incentive Contracting*, 70 J. Econ. Behav. & Org. 93, 103 (2009) (“There is no evidence that motivating a worker solely by trusting him (*a la* Hank Scorpio) is more efficient than wielding a Carrot or a Stick or a cat o’ nine tails (*a la* Monty Burns).”).

7. For discussion of the core contractual features characteristic of these collaborative contracts, see Ronald J. Gilson, Charles F. Sabel & Robert E. Scott, *Contracting for Innovation: Vertical Disintegration and Interfirm Collaboration*, 109 Colum. L. Rev. 431, 458–71 (2009) [hereinafter Gilson, Sabel & Scott, *Contracting for Innovation*].

8. For examples of collaborative contracts and supporting sources, see *infra* note 79 and accompanying text.

9. We have previously described the character of the contracting problem facing parties in rapidly innovating industries:

[T]he transactions governed by [contracts for innovation] 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,

We call the legal instrument that facilitates this interfirm collaboration a contract for innovation. The contract combines formal and informal methods of enforcement through a process we term “braiding.”<sup>10</sup> This technique builds trust,<sup>11</sup> and problem solving capacity more generally, by interweaving formal and informal terms in ways that respond to the uncertainty inherent in the innovation process. Because parties cannot specify *ex ante* the nature of the product to be produced or its performance characteristics, an informal contract will cover the terms of substantive performance; however, those performance terms will be developed through the very governance process that the formal elements of the contract create.

Contracting for innovation and the braiding of formal and informal enforcement at its core simply are not contemplated by contract theory. And while the experimental literature that explores 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, rather than a result of the relation they deliberately create amongst themselves.<sup>12</sup> Put differently, in this

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

Gilson, Sabel & Scott, *Contracting for Innovation*, *supra* note 7, at 448–51.

10. *Id.* at 435, 486–89 (“[B]raiding creates an interactive process that constrains opportunism as the parties’ investments in detailed knowledge of each other’s character and capabilities raise switching costs—the costs one party to a contract must incur in order to replace the other party to the contract.”).

11. 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.

12. 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. The other relies on character: either a taste for reciprocity independent of an economic return for reciprocal behavior, or an intrinsic refusal to behave opportunistically. See *infra* text accompanying notes 40–44 (describing three types of informal enforcement mechanisms); sources cited *supra* notes 2, 4 (examining informal enforcement). If one starts 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 distinct, because of their complementarity, they are not distinct in operation.

literature the parties contract in light of the existing level of trust between them, rather than with a view to raising it.

In this Article, we take a wider view of formal and informal contract enforcement and the relations between them than those afforded by either the contract theory or the experimental literature. We focus on the fact that contracting 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 raising the existing level of trust. It is this information-sharing regime that braids the formal and informal elements of the contract, endogenizes trust, and thereby supports the informal enforcement of the parties' substantive performance.

The information exchange that braids formal and informal elements is itself neither fully formal nor fully informal by conventional criteria, but rather is a hybrid of both types.<sup>13</sup> 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, other than discontinuance of the relationship, no penalties attend a failure to comply unless the deficient party engages in verifiable "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. Nor is the information exchange 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.<sup>14</sup>

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13. As we describe in detail below, the braiding of formal and informal enforcement consists of two interrelated features, but is reducible to neither. First, the agreement to collaborate through mutual and iterative exchanges of private information is formally (that is, legally) enforceable, but only to the extent that one party blatantly (and thus verifiably) refuses to collaborate or otherwise wrongfully exploits the information gained in the collaboration. Second, the entire course of the collaboration—including the extent to which each party expends efforts by investing in the process of information exchange and collaboration—is enforceable only by the informal routines that the agreement itself creates. See *infra* text accompanying notes 72–79 (describing informal enforcement mechanisms in braiding and assumptions that have led theoretical literature to ignore them); *infra* Part III.A (discussing *Lilly v. Emisphere*).

14. 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. For discussion, see Charness, *supra* note 4, at 376 ("Social norms and fairness are probably most salient in environments featuring a high degree of interpersonal interaction[,] . . . where perceptions of what constitutes appropriate behavior may well affect individual choices."); Fehr & Schmidt, *Fairness and Reciprocity*, *supra* note 4, at 208 ("The evidence suggests that many people are strongly motivated by other-regarding preferences, and that concerns for fairness and reciprocity cannot be ignored in social interactions."); Fehr & Falk, *Wage Rigidity*, *supra* note 4, at 109 ("Trust games . . . indicate the presence of a behavior that can be termed *positive* reciprocity. Positively reciprocal behavior is based on a willingness to pay in order to reward actions that are perceived as generous, kind, or



On the contrary, in a braided contract the parties formally obligate themselves to provide certain kinds of information, at specified intervals, at generally agreed levels of resolution.<sup>15</sup> 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.

These braiding techniques are not limited to collaborations that contemplate technological innovation. We also find interfirm collaborations in nontechnology projects that share a common feature with technology projects: The precise goal and manner of achieving it only become clear in the course of the parties' collaboration.<sup>16</sup> Thus, 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, heightened uncertainty about future states of the world gives rise to the same braiding mechanisms characteristic of collaborations aimed at creating new technology.<sup>17</sup> Moreover, in investigating this more general case, we discover that courts are beginning to impose what we call "low-powered" legal enforcement of the formal elements of braided contracts.<sup>18</sup> Formal 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.<sup>19</sup> While this emerging doctrine is a promising

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fair . . ."); Gächter & Falk, Reputation and Reciprocity, *supra* note 4, at 1–3 ("By paying generous wages and thereby appealing to the workers' reciprocity, firms can induce performance above the enforceable level.").

15. Economists call such qualified relations of reciprocity "quasi-gift" exchanges that use "low-powered" incentives to orient behavior toward ongoing collaboration as distinct from "high-powered" incentives that motivate parties to perform contractually specified tasks. For discussion, see David Guest, Management and the Insecure Workforce: The Search for a New Psychological Contract, *in* *The Insecure Workforce* 140, 141 (Edmund Heery & John Salmon eds., 2000) ("[T]o attract and, for a while at least, retain key employees, organizations must provide an environment which allows opportunities to enhance employability."); David Marsden, The 'Network Economy' and Models of the Employment Contract, 42 *Brit. J. Indus. Rel.* 659, 667 (2004) ("The longer the anticipated period of enhanced earnings, the greater the employee's corresponding loss if dismissed for poor performance—and also, arguably, the greater the 'quasi-gift exchange' to encourage above average performance."); Robert Gibbons, Incentives in Organizations, *J. Econ. Persp.*, Fall 1998, at 115, 129 ("We have seen . . . how it may be useful to impose job restrictions to reduce an agent's distractions, and that reducing the agent's outside interests (such as through changing asset ownership) can play a similar role.").

16. As suggested by the discussion *infra* text accompanying notes 134–135, we mean to distinguish innovation from incremental improvements that grow out of existing technology or patterns.

17. See discussion *infra* Part IV.B–C (identifying braiding in preliminary agreements and corporate acquisition agreements).

18. See *infra* text accompanying notes 175–179, 198–202 (discussing examples of low-powered enforcement).

19. See *infra* text accompanying notes 162–168, 200 (providing examples in which courts enforce obligations to take preliminary measures, but do not require parties to complete transactions).

first step in successfully blending formal and informal mechanisms, a review of the current case law reveals substantial judicial confusion. Courts, lacking guidance in enforcing braided contractual strategies, can be tempted to impose too much formal enforcement, and thus to undermine unwittingly the complementary interaction between formal and informal enforcement.

This Article proceeds as follows. In Part I, we 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; when outcomes are hard to characterize, and therefore difficult to verify, but are 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. Yet contract theory treats formal and informal contracting as separate domains, and experimental economics by and large treats the introduction of formal enforcement, as conventionally conceived, as crowding out the informal mechanisms otherwise available to the contracting parties.<sup>20</sup>

To move beyond this 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 that the endogeneity of the informal mechanisms in the contract—i.e., that they are largely created by the information exchange established in the formal contract—may well eliminate the risk of crowding out.<sup>21</sup> We show that gradually increasing switching costs, and building trust and enhancing problem solving capacity accordingly, is much less risky than abruptly raising switching costs to prohibitive levels either by entering binding,

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20. The tendency for crowding out will become a near inevitability when, as is 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 will 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. For discussion, see *infra* text accompanying notes 68–71.

21. See *infra* text accompanying notes 72–79 (explaining how braiding enhances collaboration and reduces risk of opportunism).

long-term agreements with particular partners or picking partners on the basis of a shared culture of reciprocity.<sup>22</sup>

In Part III, we examine the extent to which courts are prepared to enforce collaboration agreements that contemplate joint technological innovation. We analyze several contexts in which courts appear to recognize and harness the braiding phenomenon through low-powered judicial enforcement of the verifiable elements of a contract for innovation.<sup>23</sup> This technique protects parties from blatant cheating on the information exchange commitment while allowing them to explore and develop their relations without imposing mutually enforceable obligations to pursue a particular project. These decisions thus provide a useful model for when and how courts can best avoid the crowding out problem while still supporting the informal routines on which braided contracts ultimately depend.

Finally, in Part IV we move from technological innovation to a broader domain in which parties also use braided agreements. Searching for (new) partners and learning their capabilities and characteristics are an important part of collaborative partnering in an uncertain world. This practice is reflected in certain preliminary agreements and corporate acquisition transactions. Courts called on to enforce these transactions can use low-powered sanctions to protect formal contractual “preliminaries” without creating potential liability of a size that crowds out the informal contracting necessary to the collaboration. But courts that focus solely on the current legal doctrine (with its emphasis on the duty to negotiate in good faith) often succumb to the temptation to expand the legal sanction and thereby unwittingly undermine the very informal arrangements that braided obligations are designed to support.<sup>24</sup> 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.

#### I. THE ENFORCEMENT DILEMMA: THE PROBLEM OF UNCERTAINTY

The academic literature has long recognized that there are two discrete methods of contracting—one formal and legally enforceable and the other informal and subject only to self-enforcement.<sup>25</sup> In discussing

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22. Reliance on preexisting culture obstructs the joint problem solving activities needed to build the mutual capacity for adaptation that is necessary for successful long-term relations. For discussion, see *infra* Part II.B.

23. See *infra* Part III (discussing *Lilly v. Emisphere* and *FTC v. Intel Corp.*).

24. See *infra* text accompanying notes 204–221 (discussing three court decisions that potentially undermine informal collaboration supported by braiding contracts).

25. For a representative sampling of the literature, see generally David Charny, *Nonlegal Sanctions in Commercial Relationships*, 104 *Harv. L. Rev.* 373, 375–79 (1990); Stewart Macaulay, *Non-Contractual Relations in Business: A Preliminary Study*, 28 *Am. Soc. Rev.* 55, 56–57, 62–63 (1963); John McMillan & Christopher Woodruff, *Private Order Under Dysfunctional Public Order*, 98 *Mich. L. Rev.* 2421, 2421 (2000); Scott, *Conflict and*

contract enforcement, however, contemporary contract theorists typically assume that formal and informal methods are mutually exclusive 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.<sup>26</sup> The contract theory literature thus contemplates 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 latter literature, in turn, uses experiments to address whether the two strategies are substitutes, in the sense that the introduction of formal contracting will degrade the operation of informal contracting, or complements that may mutually reinforce each strategy's effectiveness.<sup>27</sup> The focus is largely on reciprocity-based informal contracting, as opposed to relational contracting based on the expectation of future dealings.<sup>28</sup>

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Cooperation, *supra* note 2, at 2009–12; Scott, *Self-Enforcing Indefinite Agreements*, *supra* note 3, at 1641–42.

26. See, e.g., Grossman & Hart, *supra* note 1, at 716–18 (describing different situations that produce formal contracting and vertical integration); Hart & Moore, *supra* note 1, at 1149–53 (summarizing “theory of the optimal assignment of assets and [using theory] to understand the boundaries of the firm”); Benjamin Klein & Keith B. Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 *J. Pol. Econ.* 615, 616 (1981) (“Market arrangements such as the value of lost repeat purchases which motivate transactors to honor their promises may be the cheapest method of guaranteeing the guarantee.”); L.G. Telser, *A Theory of Self-Enforcing Agreements*, 53 *J. Bus.* 27, 30 (1980) (studying “two situations in which self-enforcing agreements may occur”); Oliver E. Williamson, *Assessing Contract*, 1 *J.L. Econ. & Org.* 177, 182–201 (1985) (contrasting “alternative conceptions of the process of contract and relat[ing] these to . . . the condition of asset specificity”); Oliver E. Williamson, *Transaction-Cost Economics: The Governance of Contractual Relations*, 22 *J.L. & Econ.* 233, 235–38 (1979) (distinguishing between discrete and relational contracting, and describing nature of situations in which particular contractual arrangements may arise).

27. See sources cited *supra* note 4 (analyzing relationship between formal and informal enforcement mechanisms).

28. See generally, Martin Dufwenberg & Georg Kirchsteiger, *A Theory of Sequential Reciprocity*, 47 *Games & Econ. Behav.* 268, 290–91 (2004) (“[R]eciprocity can explain why employers are reluctant to hire workers who offer to work at less than the prevailing wage, a phenomenon frequently observed in labor markets.”); Ernst Fehr et al., *Reciprocity as a Contract Enforcement Device: Experimental Evidence*, 65 *Econometrica* 833, 856 (1997) [hereinafter Fehr et al., *Reciprocity*] (“[R]eciprocal motivations have important implications for the enforcement of contracts.”); Ernst Fehr & Klaus M. Schmidt, *A Theory of Fairness, Competition, and Cooperation*, 114 *Q.J. Econ.* 817, 856 (1999) [hereinafter Fehr & Schmidt, *A Theory of Fairness*] (“[O]ur examination of the gift exchange game indicates that fairness considerations may give rise to stable wage rigidity despite the presence of strong competition among the workers.”); David K. Levine, *Modeling Altruism and Spitefulness in Experiments*, 1 *Rev. Econ. Dynamics* 593, 595 (1998) (examining model in which players’ “attitudes toward other players depend on how they feel they are being treated”); Mathew Rabin, *Incorporating Fairness into Game Theory and Economics*,

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 use 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. In Part I.A, we examine the limitations of both formal and informal enforcement as uncertainty increases. As shown in Part I.B, these limitations explain the circumstances in which formal contracting crowds out informal contracting.

#### A. *Formal and Informal Enforcement and Their Limits*<sup>29</sup>

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.<sup>30</sup> 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<sup>31</sup>—serve a valuable function by unpacking complex behavior and assessing responsibility. In this way, they can detect a breach if there has been one, but can also deter disproportionate responses by an aggrieved party that would otherwise trigger a breach. To do this, courts must have better—more complete or 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 of play and then declare fouls.<sup>32</sup> 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 force the disputants to provide essential information known only to them. Once the parties offer evidence, the court can then *verify* outcomes through information each party may lack individually. Without a judicial sanction both for nonproduction and for misleading production favorable to one’s own position, 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. Breach then would not be verifiable.

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83 Am. Econ. Rev. 1281, 1282 (1993) (developing “game-theoretic framework for incorporating [certain] emotions into a broad range of economic models”).

29. The discussion in this part draws on Scott & Stephan, *Limits of Leviathan*, supra note 3, at 84–109 (discussing rivalrous relationship between formal and informal enforcement in context of international law).

30. See *infra* text accompanying notes 32–33 (discussing reciprocal reinforcement of ability to verify and formal enforcement).

31. Arbitration is also 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.

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

But the court's 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 costs of verification. Their strategies for doing so are a central theme in contemporary contracts scholarship.<sup>33</sup>

Typically, these economizing strategies turn on the tradeoff between broad standards of performance and precise, bright-line rules specifying the exact action each party must take. All else equal, it is harder, and therefore more costly, to verify performance with a broad standard than with a more precise contract term or rule. This is because, in verifying compliance with 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 will inevitably be a noisier signal of a party's performance than either the parties' direct observation of their actual actions or a judicial determination of the conformity of an act to a rule specifying an action.<sup>34</sup>

In general, therefore, contractual standards are more costly to verify than precise terms or rules because proxies must be selected and all selections are deficient, differing in some way from the unobservable behavior for which they 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 weighing the informational advantage of standards (net of 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, enhancing their

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33. See Robert E. Scott & George G. Triantis, *Anticipating Litigation in Contract Design*, 115 *Yale L.J.* 814, 839–56 (2006) [hereinafter Scott & Triantis, *Anticipating Litigation*] (describing "means by which the parties define the domain or space within which the court selects proxies at litigation").

34. *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. *Id.* at 826.

incentives to make jointly beneficial investments. This makes possible a greater range of socially beneficial joint production<sup>35</sup> and explains why formal contracts are widely used in transactional settings where outcomes are verifiable even though the parties' actual behavior is observable only with difficulty, if at all.<sup>36</sup>

Formal enforcement can break down, however, where the optimal actions for each party depend on the future state that materializes. Uncertainty about the future makes specifying most future states—let alone the appropriate action that is to be taken if they occur—prohibitively costly or impossible. 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 reallocation of control rights—will frequently turn out to be wrong *ex post*.<sup>37</sup> 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, the corresponding risks of the court choosing the wrong proxy, and even the best proxy's inadequacy all increase rapidly under uncertainty, and so deter investment as well.<sup>38</sup> To

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35. 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, rule-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.

36. 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 contracting parties that it needs more detailed guidance. See *Hexion Specialty Chems., Inc. v. Huntsman Corp.*, 965 A.2d 715, 739 (Del. Ch. 2008) (“[A]bsent clear language to the contrary, the burden of proof with respect to a material adverse effect rests on the party seeking to excuse its performance under the contract.”).

37. See Charles J. Goetz & Robert E. Scott, *Principles of Relational Contracts*, 67 *Va. L. Rev.* 1089, 1099–1100 (1981) (discussing precise terms likely to be inefficient *ex post* when passage of time replaces uncertainty with fact).

38. To elaborate this point, 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 suboptimal *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

be sure, parties writing more complex contracts can somewhat ameliorate this problem by using combinations of standards and rules.<sup>39</sup> However, as uncertainty increases—precisely the circumstances of innovation—the performance of both standards and rules deteriorates.

2. *Informal Enforcement and the Observability Problem.* — Whereas formal enforcement depends on court verification, informal enforcement depends entirely on private behavior—each party’s ability to observe directly the other’s actions and willingness to sanction misbehavior directly when it is observed. For example, parties to an agreement can often assess whether one of them has exercised “best efforts” to perform its obligation and can punish a slacker, even though marshaling the evidence necessary to convince a court to impose an equivalent punishment would be quite costly. The private sanctions that make informal enforcement effective are generally thought to be of three types. These types are mutually supportive at low to intermediate levels of uncertainty, increasing the actors’ capacity to enforce contracts where behavior is directly observable to them, but outcomes are hard to verify. As we will see, however, 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 must overcome the fact that the precise circumstances that surround innovation tend to frustrate both familiar contracting strategies.

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.<sup>40</sup> 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 a misbehaving party expects to trade with others in the

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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) [hereinafter Schwartz & Scott, *Contract Theory*].

39. See Scott & Triantis, *Anticipating Litigation*, *supra* note 33, at 851–56 (providing examples “in which the contract’s use of combinations of precise and vague terms can guide the court’s future interpretation of the standard itself, as well as the accompanying rules”).

40. See generally Robert Axelrod, *The Evolution of Cooperation* 27–54 (1984) (explaining success of tit-for-tat strategy—e.g., matching decision to cooperate or defect made by one’s opponent in previous round—in multi-round prisoner dilemma “tournaments”).



future—i.e., if trade will be multilateral rather than bilateral—so long as that party's reputation—i.e., the collective experience of others who have previously dealt with that person—becomes known to future counterparties. The actions of future counterparties then serve to discipline the misbehaving party.<sup>41</sup>

A second type of informal enforcement is normative or dispositional, supported either by the morality or tastes of the contracting parties rather than their calculations of individual gain. Much experimental evidence shows that approximately half of 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.<sup>42</sup> Similarly, experimental evidence also indicates a widespread, but 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.<sup>43</sup> Like character, a preference for reciprocity provides one explanation for how 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

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41. See sources cited *supra* note 2 (exploring effectiveness of private enforcement when formal enforcement is ineffective).

42. See, e.g., Fehr et al., *Reciprocity*, *supra* note 28, at 840 n.7 (“Although there is always a clear majority of 60–75 percent of the subjects that do behave reciprocally, between 15 and 25 percent of subjects make purely selfish choices.”); Fehr & Schmidt, *A Theory of Fairness*, *supra* note 28, at 825–26 (summarizing results of “ultimatum game” experiments); Levine, *supra* note 28, at 594 (describing results of ultimatum and public goods experiments); Rabin, *supra* note 28, at 1283 (“[F]or most experiments of one-shot public-good decisions in which the individually optimal contribution is close to 0 percent, the contribution rate ranges between 40 percent and 60 percent of the socially optimal level.”). For a review of the literature, see Fehr & Schmidt, *Fairness and Reciprocity*, *supra* note 4, at 210–18.

43. The experimental evidence on individuals' propensity to reciprocate yields two key findings. First, many people respond cooperatively to generous acts and, conversely, punish uncooperative 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 forty to sixty percent as does the fraction of subjects who are selfish. For discussion, see Fehr et al., *Reciprocity*, *supra* note 28, at 850 (finding roughly half of subjects punishing shirkers, and roughly half rewarding nonshirkers); Rabin, *supra* note 28, at 1283 (describing experiment showing contribution rate at forty to sixty percent of socially optimal level in one-shot public-goods decision games); Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, *J. Econ. Persp.*, Summer 2000, at 159, 162 (“Many studies have carried out detailed analyses of individual decisions and found that the fraction of subjects exhibiting reciprocal choices is between 40 and 66 percent.”). For applications of this experimental evidence to contract theory, see Scott & Stephan, *Limits of Leviathan*, *supra* note 3, at 88–94, 122–27; Scott, *Self-Enforcing Indefinite Agreements*, *supra* note 3, at 1661–75.

the malefactor, cutting off not just business ties but all the social benefits of belonging to the group.<sup>44</sup>

The different supports for informal contracting generally complement each other, at least as the uncertainty—and with it, the complexity—of transactions remains at low to moderate levels. But informal enforcement depends on clear observation of a counterparty's actions:<sup>45</sup> The simpler a party's action, the easier it is for the counterparty to observe and characterize. Thus, increasing complexity interferes with all three types of informal enforcement. The probability of a mistake in playing tit-for-tat increases with the difficulty of assessing a counterparty's actions. 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,<sup>46</sup> misreading a counterparty's actions as opportunistic leads to retaliation, which in turn leads to responsive

44. See Schwartz & Scott, *Contract Theory*, *supra* note 38, at 557 (“[R]eputations work best in small trading communities, especially those with ethnically homogenous members, where everything that happens soon becomes common knowledge, and boycotts of bad actors are easy to enforce.”).

45. 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 to effectively 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* 110–11 (2001) (discussing how trading within their homogeneous ethnic group helps parties economize on information costs); Lisa Bernstein, *Merchant Law in a Merchant Court: Rethinking the Code's Search for Immanent Business Norms*, 144 *U. Pa. L. Rev.* 1765, 1788 (1996) (“[Contracting parties] may be moved to [renegotiate] by social norms, commercial custom, . . . or fear of nonlegal sanctions such as reputational damage or termination of a beneficial relationship.”); Lan Cao, *Looking at Communities and Markets*, 74 *Notre Dame L. Rev.* 841, 887 (1999) (“In . . . closely knit communities, both predeal information gathering and postdeal enforcement will be relatively friction-free and cheap.”); Avner Greif, *Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders*, 49 *J. Econ. Hist.* 857, 859 (1989) (describing coalitions in which reputation mechanisms prevented cheating); Eric A. Posner, *The Regulation of Groups: The Influence of Legal and Nonlegal Sanctions on Collective Action*, 63 *U. Chi. L. Rev.* 133, 140 (1996) (reviewing literature on “how people use organizational mechanisms to solve the prisoner's dilemma”); Barak D. Richman, *Firms, Courts, and Reputation Mechanisms: Towards a Positive Theory of Private Contracting*, 104 *Colum. L. Rev.* 2328, 2340 (2004) (“A merchant who is found by a private court to have breached a contract but fails to pay receives publicity as a bad actor, leading other merchants to respond to the public ruling by refusing to deal with the transgressor.”).

46. Noise is defined as “discrepancies between intended and actual outcomes for an interaction partner due to unintended errors.” Paul A.M. Van Lange, Jaap W. Ouwerkerk & Mirjam J.A. Tazelaar, *How to Overcome the Detrimental Effects of Noise in Social Interaction: The Benefits of Generosity*, 82 *J. Personality & Soc. Psychol.* 768, 768 (2002).

retaliation. A cycle of opportunistic behavior continues until another mistake resets the cooperative equilibrium. Because tit-for-tat risks triggering a retaliatory cycle, in such a setting, it is no longer the most effective strategy. The dominant strategy is more forgiving: It allows some percentage of the other party's defections to go unpunished.<sup>47</sup> 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 forgiving an apparent defection less threatening than it would otherwise be in the absence of an independent reason to trust the counterparty.

Just as the normative or dispositional modes of informal enforcement can support tit-for-tat calculations of the value of ongoing relations when a counterparty's actual behavior becomes less observable, so too can the existence of ongoing relations 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.<sup>48</sup> 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

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47. The literature is well developed and uncontroversial: Generous tit-for-tat strategies outperform simple tit-for-tat strategies in noisy environments. See, e.g., Robert Axelrod & Douglas Dion, *The Further Evolution of Cooperation*, 242 *Science* 1385, 1387 (1988) (“[F]or sufficiently small amounts of noise, unilateral generosity is the best response.”); Jonathan Bendor, Roderick M. Kramer & Suzanne Stout, *When in Doubt . . . : Cooperation in a Noisy Prisoner's Dilemma*, 35 *J. Conflict Resol.* 691, 714 (1991) (“[G]enerosity emerged as an important ingredient of success in the present tournament.”); H.C.J. Godfray, *The Evolution of Forgiveness*, 355 *Nature* 206, 207 (1992) (“[Generous tit-for-tat] is the eventual winner . . . thanks to the midwifery of tit-for-tat.”); Martin A. Nowack & Karl Sigmund, *Tit for Tat in Heterogeneous Populations*, 355 *Nature* 250, 252 (1992) (describing evolution toward increased generosity); Van Lange, Ouwerkerk & Tazelaar, *supra* note 46, at 776 (“[A]dding generosity to reciprocity helps overcome the detrimental effect of noise on cooperation in social dilemmas.”).

48. 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.” Sylvain Chassang, *Building Routines: Learning, Cooperation, and the Dynamics of Incomplete Relational Contracts*, 100 *Am. Econ. Rev.* 448, 449 (2010). This learning then allows the relationship to better withstand “shocks”—significant changes in the economic environment that increase the difficulty of assessing counterparty's actions—because greater knowledge concerning the counterparty permits a strategy that is more patient than one that retaliates in response to every perceived opportunistic action. See *id.* at 460 (“As the players' joint history grows and information is revealed in equilibrium, player 1 learns how and when to expect cooperation, and the players are able to sustain cooperation without resorting to inefficient punishment.”).

game.<sup>49</sup> 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 to each party—and consequently, less subject to mistaken assessment.<sup>50</sup> Indeed, given the mutually supportive relation among the types of informal enforcement, we can think of them—at least at low to moderate levels of uncertainty—as aspects of a single informal enforcement mechanism, one rooted in ongoing relations among parties supported by a (normative) disposition to reciprocity.<sup>51</sup>

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49. 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. Brown, Falk & Fehr, *Relational Contracts*, supra note 4, at 752; see also Charness, supra note 4, at 383 (“While benefits of enhanced pro-social behavior can be substantial in the static case, the potential impact . . . is greater in a dynamic context, particularly in economic environments featuring repeated personal interaction.”); Fehr et al., *Reciprocity*, supra note 28, at 852 (“The shirking rate declined from 65 percent to 21 percent when a third stage was added.”); Fehr & Schmidt, *Fairness and Reciprocity*, supra note 4, at 217 (interpreting difference between behaviors that subjects exhibit in one-shot interactions and those that they exhibit in repeated interactions); Gächter & Falk, *Reputation and Reciprocity*, supra note 4, at 2 (“In this paper we present an experiment that allows us to analyse how *social norms and repeated game effects* can help to overcome this inefficiency.”).

50. Robert E. Scott & Paul B. Stephan, *Self-Enforcing International Agreements and the Limits of Coercion*, 2004 *Wis. L. Rev.* 551, 577–80 [hereinafter Scott & Stephan, *Self-Enforcing International Agreements*].

51. We acknowledge that we could cast our argument entirely in terms of the conditions under which a more forgiving form of the self-interested strategy of tit-for-tat displaces a less forgiving one, without reference to the conditions under which intrinsic or moral motives are crowded out by extrinsic, gain-oriented ones. For two reasons, we choose instead to combine the two forms of argument, and, as in the preceding discussion, even to underscore their complementarity. First, we are convinced by the experimental evidence that intrinsic motivation—particularly a propensity to reciprocity—is a fact of (some) human behavior. To be sure, we are a long way from understanding the operation and implications of such intrinsic motivation. Nonetheless, it seems odd to transcribe what we do know of it into a rational-choice vocabulary that denies, or least questions its existence. Second, to acknowledge the existence of intrinsic motivation is hardly to abandon the postulate of rational action in economic exchanges of the kind under consideration here. Rational actors are perfectly capable of making calculating decisions about when, and in relation to whom, to rely on intrinsic motivation. Indeed, a central claim in our braiding argument is that under uncertainty it is rational for actors to design institutions that allow them to develop a counterparty’s propensity to reciprocity, along with her capacities. For an earlier effort to reconcile rational-choice and intrinsic approaches to trust, see generally Charles F. Sabel, *Studied Trust: Building New Forms of Cooperation in a Volatile Economy*, in *Explorations in Economic Sociology* 104 (Richard Swedberg ed., 1993). For a review of the persistent tension between rational-choice and intrinsic perspectives, see generally Christos J. Paraskevopoulos, *Social Capital: Summing up the Debate on a Conceptual Tool of Comparative Politics and Public Policy*, 42 *Comp. Pol.* 475 (2010). We are grateful to Yochai Benkler for reminding us of just how far we are from a full understanding of intrinsic motivation and its relation to institutional rather than individual behavior.

The experimental evidence suggests, moreover, that informal enforcement, when it is effective, is both *cheaper* and *better* than formal enforcement.<sup>52</sup> Informal enforcement is cheaper because a party incurs only the costs of observing 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. Informal enforcement works better because it permits parties to make credible promises regarding observable (and perhaps observable only with repetition), but nonverifiable measures of performance. They thus avoid both the risk of opportunism arising from formal enforcement of a precise rule and the moral hazard associated with the *ex post* application of a broad standard.<sup>53</sup> These advantages explain why, in commercial contracting, parties often rely on informal enforcement even when formal sanctions are available.<sup>54</sup>

Even assuming 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,<sup>55</sup> they

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52. Scott, *Self-Enforcing Indefinite Agreements*, *supra* note 3, at 1679–80.

53. Indeed, the experimental evidence indicates that it can pay to write agreements based on observable but unverifiable 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, 368–72 (Peter Hammerstein ed., 2003). The existence of both persistent differences *among* groups and conformity *within* groups supports the hypothesis that groups with more cooperative norms are more likely to prevail in group conflict, and thus the hypothesis that evolutionary pressures will lead to the selection of their norms. Ernst Fehr & Urs Fischbacher, *Social Norms and Human Cooperation*, 8 *Trends Cognitive Sci.* 185, 189 (2004).

54. This insight was first explored in Stewart Macaulay's classic account of how commercial contractual relationships rely on informal enforcement even when the parties have entered into a formal, legally enforceable contract. Macaulay, *supra* note 25, at 62–65.

55. The analysis becomes much more complicated when the individual deciding whether 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 has two ways in which to behave opportunistically in connection with a particular transaction. First, she may cheat the counterparty when it is in the firm's interest. Second, her personal incentive structure may cause her to cheat the counterparty even though doing so is not in the firm's interest because of the counterparty's retaliation. This latter conflict will exist, for example, where a system of annual bonuses is not tied 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 that can use informal contracting, see David M. Kreps, *Corporate*

are subject to inherent limitations. Informal contracting, even that supported by taste and character, works best with repeat play in the narrowest sense: That the same actors repeatedly do the same things with each other makes conduct more observable, an indispensable element of informal contracting. The more that actors undertake novel activities with strangers—precisely the conditions of collaborative innovation we analyze here—the greater their chances of either mischaracterizing each other's acts and intentions, or 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 dissipates due to 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.<sup>56</sup> Instead, retaliations escalate and destroy the relation.<sup>57</sup>

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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. Can contract planners 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 cannot.

#### B. *Complements or Substitutes? Explaining the Rivalry Between Formal and Informal Enforcement*

The preceding discussion suggests that contracting parties should aim 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 reputa-

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Culture and Economic Theory, *in* Perspectives on Positive Political Economy 90, 119 (James E. Alt & Kenneth A. Shepsle eds., 1990) (“[O]thers can see what the firm . . . did and decide whether to enter into similar transactions . . .”), requires the firm to have an internal corporate incentive system that aligns the individual employee’s incentives 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.* 239, 309–11 (1984).

56. See *supra* text accompanying notes 46–47 (discussing benefits of forgiving strategies in certain contexts).

57. See Scott & Stephan, Self-Enforcing International Agreements, *supra* note 50, at 569 (“[R]etaliation imposes stress on any ongoing relationship that may threaten its survival.”).

tion, repeated interactions, or reciprocity) to enforce contingencies that are difficult to verify but clear enough to be observable. A mixed strategy is feasible if formal and informal enforcement mechanisms can be complements, but not if they are substitutes where recourse to formality degrades—crowds out—the operation of informality. Here, existing theory and evidence offer limited guidance. Experimental research has demonstrated that, in many instances, formal mechanisms crowd out informal enforcement.<sup>58</sup> 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 inferior or impossible. Predicting when the crowding out effect dominates complementarity requires an understanding of the mechanism through which formal enforcement degrades the operation of informal contracting.<sup>59</sup>

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 crowding out occurs 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.<sup>60</sup> In other words, we see crowding out when formal contracting makes the parties' actions and performance less observable. This occurs, we suggest, because of the effects of two interrelated factors: (a)

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58. See sources cited *supra* note 6 (describing evidence of crowding out).

59. Cf. Scott & Stephan, *Self-Enforcing International Agreements*, *supra* note 50, at 579–80 (listing possible explanations for why “reciprocal fairness and repeated interactions complement each other while reciprocal fairness functions as the rival of coercive enforcement”). A recent paper highlights the need to understand rather than merely describe the interaction of formal and informal contracting. Eileen Y. Chou, Nir Halevy & J. Keith Murnighan, *The Hidden Costs of Contracts on Relationships and Performance* (Int'l Assoc. of Conflict Mgmt., 23d Annual Conference Paper, 2010), available at <http://www.ssrn.com/abstract=1612376> (on file with the *Columbia Law Review*). The authors report the results of small, student-subject experiments and reach the conclusion that the negotiation and existence of contracts had “adverse effects . . . on relationship-formation, team performance, and cooperation levels.” *Id.* at 11. The difficulty is that, in the absence of an underlying explanation for the observed phenomenon, one is left with neither a positive account of when parties successfully combine formal and informal contracting, nor a normative account of the techniques that accomplish this result.

60. 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. See *infra* text accompanying notes 131–133 (discussing *Lilly v. Emisphere*). High-powered enforcement consists of 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. Low-powered enforcement, in turn, consists of imposing sanctions only for verifiable failures to collaborate as promised, and not for failure of the parties to invest sufficiently in the collaboration process or for the process to yield particular outcomes.

Formal enforcement changes the way a party *perceives* the observed behavior of the counterparty (and consequently changes the party's understanding of how it should behave); 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 how introducing a legal sanction for breach of a performance obligation affects 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 using formal sanctions to cause parents to pick up their children from day care on time.<sup>61</sup> To improve punctuality, a fine was imposed for tardiness. The perverse result was an increase in late pickups. The formal fine "crowded out" the reputation-based norm by changing the parents' perceptions of each others' obligation from a commitment to the community to a price for additional day care.<sup>62</sup>

The experimental literature finds similar results in more commercial settings.<sup>63</sup> 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.<sup>64</sup> 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, both the average price offered and the average effort given decline significantly. The introduction of the formal enforcement option causes shirking to increase, and trust—either in the form of generous offers, reciprocating responses, or both—vanishes almost completely.<sup>65</sup> In effect, the introduction of a 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 renders parties "relatively more likely to make income-maximizing decisions."<sup>66</sup> Just as with the day care story described above, the addition of formal enforcement turns an informal obligation to perform into a price for nonperformance—the cost of damages imposed by a court.

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61. Gneezy & Rustichini, *supra* note 6, at 13–14. An extensive literature in social psychology also considers the crowding out of intrinsic motivations. See Deci, Koestner & Ryan, *supra* note 6, at 658–59 (“[T]angible rewards tend to have a substantially negative effect on intrinsic motivation . . .”).

62. Gneezy & Rustichini, *supra* note 6, at 13–14.

63. See, e.g., Bohnet, Frey & Huck, *supra* note 6, at 141 (“In a contractual relationship, economic incentives have a nonmonotonic influence on contract performance.”).

64. Fehr & Gächter, *Crowd Out*, *supra* note 6, at 13–15. A similar result is reported by Houser et al., *When Punishment Fails*, *supra* note 6, at 522–23.

65. Fehr & Gächter, *Crowd Out*, *supra* note 6, at 15–17.

66. Daniel Houser, Erte Xiao, Kevin McCabe & Vernon Smith, *When Punishment Fails: Research on Sanctions, Intentions, and Non-Cooperation* 21 (June 8, 2005) (unpublished manuscript), available at <http://ssrn.com/abstract=788204> (on file with the *Columbia Law Review*).



Moreover, when the inclusion of explicit, formal penalties changes the parties' perception of their interaction, that change also may signal 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 sanction failure to perform the formal contract to mean that the counterparty is less likely to be a reciprocator. A low-powered sanction (say, terminating the relationship), imposed only after defection has been observed, does not create the same uncertainty concerning the counterparty's character. 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.<sup>67</sup> In the latter case, the signals in the proffered contract terms 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 contracts will be chosen.

A second factor contributing to the crowding out phenomenon is the impact of formal legal sanctions on the frequency or incidence of the behavior that supports informal contracting. Analysis of reciprocal behavior and the constraints of formal sanctions shows that when formal rules and associated sanctions apply to all elements of a relationship—that is, when formal sanctions are keyed to all outcome variables—the “high-powered” formal enforcement suppresses the production of information that supports reciprocity.<sup>68</sup> Outcome variables that drive formal enforcement of contract terms are verified under a “breacher-status” rule: There is only one breacher, and the breacher not only suffers the predetermined damages sanction, but also sacrifices any benefits that otherwise have accrued under the contract.<sup>69</sup> In a sense, high-powered legal enforcement intended to create efficient contractual incentives to perform specified actions functions as a “first strike” nuclear weapon, allowing the nonbreacher to capture all contract gains and imposing all losses on the breacher.<sup>70</sup> 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

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67. Scott & Stephan, *Self-Enforcing International Agreements*, *supra* note 50, at 580.

68. Scott & Stephan, *Limits of Leviathan*, *supra* note 3, at 106–08.

69. 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., U.C.C. § 2-718 cmt. 1 (2001) (noting unreasonably small stipulated damages “might be stricken under the section on unconscionable contracts”). Second, proportional responses to nonperformance are impeded by the “breacher-status” rule: There is only one breacher and the breacher is not only liable for compensatory damages, but 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) [hereinafter Goetz & Scott, *The Mitigation Principle*].

70. Scott, *Conflict and Cooperation*, *supra* note 2, at 2042–44.

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.<sup>71</sup> 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 and which can confirm a party’s tastes or character. 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.

## 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. Because innovation also reduces the capacity of formal contracting, neither informal contracting nor formal contracting alone can encourage the necessary relationship-specific investments. The endogenous uncertainty inherent in contracts for innovation renders the parties’ performances both difficult to observe and therefore unsuitable for informal contracting, and difficult to verify and therefore unsuitable for formal contracting.

To deal with these circumstances, commercial parties are writing contracts that braid formal and informal elements. In such agreements, formal contracting establishes processes that make behavior observable enough to support informal contracting over the substance of the innovation.<sup>72</sup> 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

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71. In addition to the fact 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 the other with these consequences whenever the other discloses anticipated difficulties in performance. The mitigation doctrine operates only 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 nonperformance. 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 69, at 1011–18.

72. Gilson, Sabel & Scott, *Contracting for Innovation*, supra note 7, at 476–89.

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 those actions that would be opaque in an unstructured, informal exchange.<sup>73</sup> 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.<sup>74</sup>

Braiding uses formal contracts to create governance processes which support iterative joint efforts with low-powered enforcement techniques that partially protect the commitment to collaborate, but do not 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.<sup>75</sup> The second mechanism is a procedure for resolving disputes arising from the first. Its key feature—what we call the “contract referee mechanism”<sup>76</sup>—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; 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 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 contract theory more generally, ignore this possibility because of two closely related assumptions. First, they assume that the level of trust and hence the availability of informal enforcement—here, confidence in a

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73. See *infra* Part II.A.2 (describing how braided contracts work).

74. See *infra* text accompanying notes 107–109 (describing Japanese and German approaches to raising switching costs).

75. See Gilson, Sabel & Scott, *Contracting for Innovation*, *supra* note 7, at 476–79 (discussing contractual requirement “that both parties invest in producing information”).

76. *Id.* at 479–81.

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.<sup>77</sup> Second, they assume that introducing formal elements to this informal relation will crowd out trust, 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.<sup>78</sup>

In the real world of commercial contracting, however, parties have found a way out of this dilemma. 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.<sup>79</sup> 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

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77. See *supra* text accompanying note 12 (assessing experimental literature's assumption of exogeneity).

78. See *supra* text accompanying notes 58–70 (discussing where experimental literature has found evidence of crowding out).

79. A nonexhaustive and nonrandom sample of collaborative contracts that combine formal and informal elements can be found at [onecle.com](http://www.onecle.com) (<http://www.onecle.com>) and the Contracting and Organizations Research Institute (<http://cori.missouri.edu>). See, e.g., Boeing Co. & Spirit Aerosystems Inc., General Terms Agreement (June 30, 2006) (on file with the *Columbia Law Review*) (agreeing to general terms covering purchase orders by Boeing for particular product to be supplied by Spirit); Nanosys, Inc. & Matsushita Electric Works, Ltd., Development Agreement (Nov. 18, 2002) (on file with the *Columbia Law Review*) (agreeing to collaborate to develop photovoltaic devices with nano components in Asia); John Deere & Co. & Stanadyne Corp., Long Term Agreement (Dec. 14, 2001) (on file with the *Columbia Law Review*) (contracting for Deere to purchase fuel filtration systems, injection nozzles, and related products from Stanadyne for five years); Warner-Lambert Co. & Ligand Pharmaceuticals Inc., Research, Development and License Agreement (Sept. 1, 1999) (on file with the *Columbia Law Review*) (agreeing to collaborate on pharmaceutical research and development); AVSA S.A.R.L. & New Air Corp., Airbus A320 Purchase Agreement (Apr. 20, 1999) (on file with the *Columbia Law Review*) (agreeing for New Air Corp. to purchase aircraft from AVSA); Allstate Insurance Co. & Axiom Corp., Data Management Outsourcing Agreement (Mar. 19, 1999) (on file with the *Columbia Law Review*) (contracting for Axiom to develop data acquisition system to support Allstate's underwriting of new business in auto and property insurance); American Axle & Manufacturing, Inc. & General Motors Co., Component Supply Agreement (June 5, 1998) (on file with the *Columbia Law Review*) (contracting for AAM to supply motor vehicle components to GM); Apple Computer, Inc. & SCI Systems, Inc., Fountain Manufacturing Agreement (May 31, 1996) (on file with the *Columbia Law Review*) (agreeing for SCI to produce designated products at Fountain, Colorado plant); Phoenix Technologies Ltd. & Intel Corp., Supply Contract (Dec. 18, 1995) (on file with the *Columbia Law Review*) (contracting for Phoenix to be principal supplier of system-level software to Intel); see also George S. Geis, *The Space Between Markets and Hierarchies*, 95 *Va. L. Rev.* 99, 121–26 (2009) (citing examples of collaborative contracts).

the risk of opportunism and motivating the iterative exchange of private information. We now look in detail at one such countertheoretic 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-Myers Squibb (BMS), illustrates the essentials of braiding.<sup>80</sup> We take this agreement to be prototypical, not representative, of contracts of its type: Its elements are not those most frequently 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. The Pharma/BMS agreement is thus 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.<sup>81</sup>

The Pharma/BMS contract contains both an agreement to collaborate on procuring compound libraries to increase productivity in the drug-discovery industry, and a grant of a license to BMS to develop and commercialize therapeutic or prophylactic “products” that the collaboration produces.<sup>82</sup> The collaboration calls for the parties to conduct joint research pursuant to 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.”<sup>83</sup> The collaboration is to proceed interactively, each party using “reasonable efforts” to perform the work under the plan,<sup>84</sup> providing quarterly reports to the RSC,<sup>85</sup> disclosing all inventions,<sup>86</sup> keeping an open research laboratory for the other party to visit,<sup>87</sup> and permitting open inspection of all data and research materials.<sup>88</sup>

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80. Pharmacopeia, Inc. & Bristol-Myers Squibb Co., Collaboration & Licensing Agreement (Nov. 26, 1997) [hereinafter Pharma/BMS Agreement], available at <http://contracts.onecle.com/accelrys/bristol-myers.collab.1997.11.26.shtml> (on file with the *Columbia Law Review*). We are grateful to Victor Goldberg, who made substantial contributions to the analysis of the Pharma/BMS Agreement.

81. For other exemplars of contracts that deploy a similar braiding strategy, see *supra* note 79.

82. “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. Pharma/BMS Agreement, *supra* note 80, art. 1.30.

83. *Id.* art. 2.1.

84. *Id.* art. 2.2(b).

85. *Id.* art. 2.2(d).

86. *Id.* art. 10.1.

87. *Id.* art. 2.2(g).

88. *Id.* art. 2.7(b).

The annual research plan establishes specific benchmark objectives consistent with BMS's funding obligations. Each plan approved by the RSC is to be signed and dated by each representative.<sup>89</sup> 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.<sup>90</sup> 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.<sup>91</sup> Termination eliminates BMS's funding obligations, but BMS must pay a termination fee.<sup>92</sup>

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.<sup>93</sup> 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 information exchange and keeps detailed records of its own activities.<sup>94</sup> And, perhaps most importantly, article 3.4 provides that all decisions of the RSC must be unanimous. If the RSC cannot reach unanimity on a particular matter, then that issue is referred to senior vice presidents for each firm. If they disagree, then the decisionmaking process moves up the respective firms' hierarchies to the two CEOs.<sup>95</sup> Only if the CEOs fail to resolve the differences can BMS terminate its funding.<sup>96</sup>

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89. *Id.* art. 2.3.

90. *Id.* art. 1.1.6 (“Initial Term” shall mean the period commencing on the Effective Date and terminating on the third anniversary thereof.”); *id.* art. 2.4.2 (“The Research Term may be extended for up to two (2) years following the Initial Term.”).

91. *Id.* art. 2.4.3.

92. *Id.* art. 2.4.4(a) (describing elimination of BMS's obligations); *id.* art. 2.4.4(b) (describing termination fee). BMS funds the research plan according to a schedule of research phases at \$X per phase. *Id.* art. 7.2.1.

93. *Id.* art. 3.2.

94. *Id.* art. 3.1 (describing responsibilities); *id.* art. 3.3 (describing frequency of meetings).

95. *Id.* art. 3.4.

96. We have 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.

The contract referee 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 is to resolve problems, not escalate them.

Gilson, Sabel & Scott, Contracting for Innovation, *supra* note 7, at 480–81.

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, by BMS. In view of this possibility, Pharma grants BMS a worldwide license to make and develop all active and derivative compounds resulting from the research (and other compounds defined as those arising from the research but not anticipated as one of its original targets), and to make and develop all products containing these compounds.<sup>97</sup> 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.<sup>98</sup> BMS is to pay a designated license fee within ten days of the effective date of the agreement, and BMS is to pay Pharma a designated royalty on aggregate net sales of the product.<sup>99</sup> Finally, BMS is to use commercially reasonable efforts, comparable to those expended on its own products, to develop and commercialize active compounds.<sup>100</sup>

An important feature of the contract is the series of options granted to each party as the collaborative research phase ends.<sup>101</sup> 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.<sup>102</sup> The parties are obligated to negotiate in good faith the terms of such a

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If the CEOs fail to resolve disagreements, ongoing disputes are first subject to mediation under the American Arbitration Association rules prior to binding arbitration (three expert arbitrators with streamlined procedures, all awards final and binding, no limitation or liquidation of damages). Pharma/BMS Agreement, *supra* note 80, art. 15.13.2.

97. Pharma/BMS Agreement, *supra* note 80, art. 6.1–6.3.

98. *Id.* art. 6.2.2. NDA filing and NDA approval refer to the New Drug Application and Approval processes of the Food and Drug Administration that are prerequisites to the marketing of a new drug therapy to the general public. *Id.* art. 1.23; see also 21 U.S.C. § 355 (2006) (outlining process for introducing new drugs into interstate commerce).

99. Pharma/BMS Agreement, *supra* note 80, art. 7.1 (describing license fee); *id.* art. 7.4.1 (describing royalties). “Net Sales” means “invoice price of Products sold.” *Id.* art. 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. *Id.* art. 7.4.2.

100. *Id.* art. 9.1. Each firm owns the rights to intellectual property (IP) developed by their lab individually. Jointly developed IP is owned collectively. *Id.* art. 10.1. Each firm undertakes to prosecute patent applications for its own IP, to keep the other fully informed, and to pay its own out-of-pocket costs. *Id.* art. 10.2.1.

101. As the collaboration ends, the potential for opportunism reemerges, but the need for continuing the joint work, given the remaining uncertainty of outcome, prevents the anticipation of a final period from causing unraveling through backward induction. Once the collaborative research has ended, the parties must divide the surplus created, and the options are means to that end.

102. *Id.* art. 9.3.1.

license.<sup>103</sup> Thus, the contract gives BMS an initial option to attempt to commercialize the product of the research under the 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, and minimizes misunderstanding. 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 noncontractible 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 disagreements are pushed up the firm hierarchy. The research plan's structure thus depends on co-design and reciprocity. At first blush, therefore, it appears that the entire process of adaptation and adjustment must be informal. But if the deal only contemplates the use of informal sanctions to constrain opportunism during the collaboration process, then what is the function of the formalized governance structure? 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. We 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; in other words, imagine that the contract made no provision at all for the end game—the commercialization of the fruits of the collaboration. 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 both forestall completion of the project and 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—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

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103. Id. art. 9.3.2.



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 support the informal contract—governing the search for a product—and the high-powered formal contractual regime—governing a product's 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 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 allowing the actual collaborators to observe as much of the collaborative behavior as possible. Second, it reduces the costs of (and the risk of error in resolving) conflicts that nonetheless occur by enabling the reviewing authorities (the CEOs) and ultimately courts to verify as much of the collaborators' behavior as possible. Insisting on this process will have the additional and indispensable benefit of reassuring the CEO of Pharma, her counterpart in dispute resolution, 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, recognizing both the desire to collaborate and that collaboration could fail, the institutional architects reason backward into the governance structure that we observe: a dispute resolution system that deters blatant breaches of the commitment to collaborate and also minimizes the risk of erroneous judgments of breach. And just as the separation of the exploration from the commercialization regimes reduces the risk of crowding out, so also 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 formal, public enforcement) and observability (typically associated with informal enforcement).<sup>104</sup>

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104. 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 nonlegal sanctions in cotton industry).

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

To get another vantage point from which to understand the operation of braiding mechanisms, we next 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. *The Insufficiency of “Locked-in” Collaboration as an Alternative to Braiding*

To readers familiar with German and Japanese industrial structure—“Coordinated Market” capitalism,<sup>105</sup> which differs from the more contractual and fluid Anglo American variety—the creation of a governance structure to generate an information exchange regime that does not ultimately 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.<sup>106</sup> This exchange locks the parties into a continuing relationship, so constraining their choices that for each party the best strategy is to work at 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, helping parties to correct mistakes, and raising, endogenously, the level of trust.

The Japanese *keiretsu*, in which collaborators formally mark their mutual commitment by cross-holdings of equity stakes, is a prominent exam-

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105. See generally Peter A. Hall & David Soskice, An Introduction to Varieties of Capitalism, in *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* 1, 21–27, 33–36 (Peter A. Hall & David Soskice eds., 2001) (identifying Germany and Japan as “coordinated market economies,” but noting Germany relies on “industry-based coordination,” whereas Japan fosters “group-based coordination”).

106. Cf. Wolfgang Streeck, Co-determination: After Four Decades, in *Social Institutions and Economic Performance* 137, 137 (1992) (discussing German policy of “co-determination,” which requires “equal representation of capital and labor on the supervisory boards of coal and steel companies” and arguing that “co-determination . . . has contributed to creating and reinforcing a vested interest of workers in ‘social partnership’ and ‘cooperation’ in the enterprise”); Wolfgang Streeck, Beneficial Constraints: On the Economic Limits of Rational Voluntarism, in *Contemporary Capitalism* 197, 201–04 (J. Rogers Hollingsworth & Robert Boyer eds., 1997) [hereinafter Streeck, *Beneficial Constraints*] (noting social constraints on employer action in Germany and Japan, and finding that “[s]ocial constraints on rational behavior can reinforce trust, and thus facilitate the rational pursuit of economic objectives, by reassuring potentially suspicious parties of continued adherence to reciprocity regardless of changes in circumstances”).

ple of a formal obligation that enhances trust.<sup>107</sup> German economic history is replete with analogous organizational forms, often centered on a bank owning equity stakes and making long-term loans to a network of related companies.<sup>108</sup> This is stakeholder, not shareholder capitalism: The collaborating parties have long-term interests in enterprises on whose success their identity depends, not short-term interests in project-based 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 first raise switching costs—in effect prohibiting exit from the relationship—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 firms and both their employees and suppliers as “beneficial constraints”: The mutual accommodations they entail 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.<sup>109</sup>

This juxtaposition is, of course, overdrawn. In practice, suppliers in the coordinated market economies have to undergo a long period of qualification and careful scrutiny by their customers before achieving the status of long-term partner.<sup>110</sup> 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 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.<sup>111</sup> For example, such stakeholder economies are better suited to incremental innovation than to radical innovation.<sup>112</sup>

But even with this qualification, the existence of an alternative to iterative collaboration—building trust through an *ex ante* lock-in to a long-term obligation rather than increasing switching costs incrementally—raises a pertinent question: Are the two forms functionally

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107. Masahiko Aoki, *Information, Incentives, and Bargaining in the Japanese Economy* 119–20 (1988).

108. Gary Herrigel, *Industrial Constructions: The Sources of German Industrial Power* 83, 187 (1996).

109. See Streeck, *Beneficial Constraints*, *supra* note 106, at 201–04 (describing beneficial constraints on employers in Germany and Japan).

110. Ken-ichi Imai, *Japan’s Corporate Networks*, in 3 *The Political Economy of Japan* 198, 217–18 (Shumpei Kumon & Henry Rosovsky eds., 1992).

111. See Mashiko Aoki, *Toward an Economic Model of the Japanese Firm*, 28 *J. Econ. Literature* 1, 9 (1990) [hereinafter Aoki, *Economic Model*] (noting importance of social changes in Japanese labor market); Hall & Soskice, *supra* note 105, at 50–54 (describing social policy regimes of “coordinated market economies” in Germany and Japan and noting each country’s political system complements its stakeholder structure).

112. Hall & Soskice, *supra* note 105, at 39–44.

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. 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 that are revealed by 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 magnifies 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 this conclusion.

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.<sup>113</sup> Disentangling the various sources of this strain is difficult. Changes in capital markets—particularly increased sources of capital—have complex implications for the utility of cross-holdings. These changes play a role in straining *keiretsu* ties. Similarly, low stock prices and increased international capital requirements strain the ability of Japanese banks to maintain cross-holdings.<sup>114</sup> Pressures for improved financial performance may cause firms to shift to low-cost suppliers, to the detriment of long-term relations with more capable collaborators. But there are consistent reports of strains within “vertical” *keiretsu* linking up-

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113. For Germany, see Gary Herrigel, *Manufacturing Possibilities: Creative Action and Industrial Recomposition in the United States, Germany, and Japan* (forthcoming 2010) (manuscript at 196–97) [hereinafter Herrigel, *Manufacturing*] (on file with the *Columbia Law Review*) (“[I]n crucial ways [systemic reflexes] have not been enough for producers . . .”). For Japan, see Jean McGuire & Sandra Dow, *Japanese Keiretsu: Past, Present, Future*, 26 *Asia Pac. J. Mgmt.* 333, 342 (2009) (arguing demands from global financial stakeholders may lead to “weakening of *keiretsu* ties”); Sandra Dow, Jean McGuire & Toru Yoshikawa, *Disaggregating the Group Effect: Vertical and Horizontal Keiretsu in Changing Economic Times*, *Asia Pac. J. Mgmt.* Online First 19 (Aug. 1, 2009), at <http://www.springerlink.com/content/e752203516670x54/about/> (on file with the *Columbia Law Review*) (“[S]hifts away from both horizontal and vertical *keiretsu* affiliation were observed.”).

114. Hideaki Miyajima & Fumaki Kuroki, *The Unwinding of Cross-Shareholding in Japan: Causes, Effects, and Implications*, in *Corporate Governance in Japan* 79, 117 (Masahiko Aoki, Gregory Jackson & Hideaki Miyajima eds., 2007).

stream suppliers and their downstream customers.<sup>115</sup> For example, a careful study 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. By the late 1980s, Toyota—which spun out Denso as an independent company in 1949—concluded 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.<sup>116</sup> As part of the same effort to become a more active and capable collaborator, Toyota began collaborating with Texas Instruments and other suppliers to develop sophisticated equipment.<sup>117</sup>

Thus, the shift was neither toward more vertical integration nor toward short-term contracting, but rather in the direction of the “open” and deliberately monitored incremental collaboration typical of braiding in contracting for innovation. Studies of the reorganization of German customer-supplier relations report similar changes.<sup>118</sup> 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.<sup>119</sup> 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 disincentives to learn: “[S]ay, whenever a problem arises, well, you simply assume that [a customer firm closely connected to your 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.”<sup>120</sup> Suppliers that grow up with a restricted range of partners in such protected conditions are 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-

115. Christina L. Ahmadijan & James R. Lincoln, *Keiretsu, Governance, and Learning: Case Studies in Change from the Japanese Automobile Industry*, 12 *Org. Sci.* 683, 692 (2001).

116. *Id.* at 685–86.

117. See *id.* at 686 (discussing deterioration of Toyota’s *keiretsu* relationship).

118. See Herrigel, *Manufacturing*, *supra* note 113, at 191 (describing “very extensive study” conducted jointly by three German research institutes, which found “German suppliers were indeed being asked to participate in product development at much earlier stages than they had in the past”).

119. Cressida Lui, *Collaboration on Thin Ground: Contract Production Arrangements Between Taiwanese Firms and Their American MNC Customers in the Personal Computer Industry*, ch. 7 p. 2 (Apr. 21, 2009) (unpublished Ph.D. dissertation, University of Wisconsin-Madison) (on file with the *Columbia Law Review*).

120. *Id.* at ch. 7 p. 5.

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.<sup>121</sup>

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 innovative spirits.<sup>122</sup> 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.<sup>123</sup> 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.<sup>124</sup>

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.<sup>125</sup> 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 context of the nonlinear innovation that we examine. This is consistent with the

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121. *Id.*

122. Interview with Gregg Kirchoffer, Partner, Kirkland & Ellis, in Chi., Ill. (Apr. 10, 2009) (on file with the *Columbia Law Review*).

123. *Id.*

124. *Id.*

125. See Aoki, *Economic Model*, supra note 111, at 23 (“[R]elatively dissimilar patterns in the West and Japan[ ] may have to do with historical, cultural, and regulation factors.”); Paul Milgrom & John Roberts, *Complementarities and Systems: Understanding Japanese Economic Organization*, 9 *Estudios Economicos* 3, 36 (1994) (“[C]apital market conditions and practices have been key elements in the Japanese model.”).

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 responds 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.<sup>126</sup> This emergence has been accompanied by judicial and regulatory recognition that protection of such arrangements has become important to commercial exchange. In Part IV, therefore, we extend 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 build trust by avoiding crowding out from those that do not. But first, we examine in Part III the extent to which courts are prepared to enforce collaboration agreements that contemplate joint technological innovation. Here we find a useful model for when and how courts can best avoid the crowding out problem and still use formal enforcement to support the informal routines on which braided contracts ultimately depend.

### III. BRAIDING IN THE COURTS: SUPPORTING TECHNOLOGICAL INNOVATION WITH LOW-POWERED FORMAL ENFORCEMENT

In this Part, we examine the extent to which collaboration agreements that contemplate joint technological innovation, such as the BMS/Pharma contract described above, are formally enforceable. To the extent that trust is endogenous and thus dependent on the information exchange regime established by the contract, informal norms will not be very effective in governing the parties' behavior at the beginning of the collaboration. By hypothesis, these are strangers who are not necessarily repeat players and each has no rational basis for believing that, absent enforceable legal obligations, the other will not breach when it is in its self interest to do so. Thus, at the beginning of the collaboration, the parties must rely largely on formal norms—verifiable legal obligations—to provide the assurance each party needs to share information and cooperate on a mutual research and development regime.

Ideally, courts would respond to the challenge of contracting for innovation 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 verifiable elements of 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, as we show in the discussion that

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126. See *infra* text accompanying notes 162–166 (describing emerging case law that creates new rules for enforcing preliminary agreements).

follows, this is what we are beginning to see: Courts (and regulators) in leading cases are sanctioning shamelessly selfish abuse of information exchange regimes and deploring the unwillingness of the abusing party to make use of the joint problem-solving mechanism that it has cosponsored. Because the sanction is tied only to verifiable breaches of 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 collaboration commitment can achieve its intended purpose of generating information and trust precisely because it never entails an obligation beyond nominally abiding by the commitment to collaborate during the period of joint exploration: Formal enforcement is only low-powered and thus the parties' specific investments in information during the course of the collaboration are left entirely to informal mechanisms.

A. *Formal Enforcement of Pharmaceutical Collaborations: Eli Lilly & Co. v. Emisphere Technologies, Inc.*

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.*<sup>127</sup> Lilly and Emisphere agreed in 1997 to collaborate in research on new chemical "carrier" compounds.<sup>128</sup> 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. As the court wrote: "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."<sup>129</sup>

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 also 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.<sup>130</sup>

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127. 408 F. Supp. 2d 668 (S.D. Ind. 2006).

128. *Id.* at 671.

129. *Id.* 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 674 (citing art. 2.1 of contract between parties).

130. *Id.* at 680.



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.<sup>131</sup> In short, the parties had entered into a form of cooperative agreement that had important—and legally enforceable—limits. When Lilly undertook its secret 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.<sup>132</sup>

*Lilly v. Emisphere* illustrates how courts can use formal enforcement to support a contractual relationship when informal mechanisms have failed. By sanctioning only “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 imposed a low-powered formal sanction: It did not attempt to regulate the nature or

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131. *Id.* at 689–91.

132. *Id.* at 697. 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, relating to research, development, manufacturing and distribution of stents.” *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.*, 226 A.2d 903, 905–07, 909 (Vt. 1967) (affirming damage award for breach of implied covenant not to use patent beyond scope of license).

course of the collaborative interactions.<sup>133</sup> Thus, the maintenance of the collaboration protocols established by the parties, and the resulting specific investments in information exchange, was left entirely within the province of the internally generated, informal enforcement mechanism. The formal enforcement only excluded a (secret) alternative process that undermined the trust that was in fact generated through braiding.

B. *Protecting the Information Exchange Regime in Platform Production:*  
Federal Trade Commission v. Intel Corp.

A prominent manifestation of the increased importance of preliminary exploration of collaborative possibilities in an increasingly uncertain world is the spread of platform production. In these systems, applications or devices have value because they are linked and conveniently accessed through a common operating system. Conversely, the operating system has value because of its ability to accommodate a wide and shifting suite of applications.<sup>134</sup> Co-development is endemic and persistent in such systems: No one 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.<sup>135</sup> 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 the 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.

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133. It is important to emphasize that what distinguishes low-powered from high-powered enforcement is not the character of the remedy that is imposed per se, but rather what kind of obligation is found to be enforceable. In *Lilly v. Emisphere*, the court had essentially three choices. First, the court could have granted Lilly's request to find the contract not legally enforceable and limit Emisphere to a suit for patent infringement. In that case, Emisphere would likely have been without any remedy as no patent was infringed. Second, the court could have chosen high-powered enforcement and held that Lilly had breached a contractual obligation to produce a successful chemical carrier compound, awarding damages for failure to perform the contract successfully. Third, the court could have held that the contract was enforceable but only to the extent that it barred Lilly from misappropriating private information shared during the collaboration. This last sanction—the one the court chose—is low-powered in that it requires only that Lilly not cheat; it does not obligate Lilly to affirmatively do anything. See supra note 60 (describing difference between low-powered and high-powered sanctions).

134. 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 modularity facilitates innovation by organizing independent, complementary, and specialized producers); cf. David S. Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, 20 Yale J. on Reg. 325, 331–36 (2003) (describing economics and conditions of platform markets, which productively coordinate needs and abilities of complementary participants).

135. Gilson, Sabel & Scott, *Contracting for Innovation*, supra note 7, at 438–44.

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 is widely acknowledged as a leader—perhaps *the* leader—in platform development.<sup>136</sup> Product generation after product generation, Intel maintains various innovative “ecologies” in which it, together with its independent collaborators, develops new tools for producing microprocessors ever 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.<sup>137</sup> Because the capabilities of the computer depend so directly on the capabilities of the microprocessor, it is impossible to design the next generation of a computer without detailed, advance knowledge of the performance of the microprocessor that the computer will incorporate. Intel makes the necessary design information available to its collaborators in the personal computer, workstation and server industries through the Advance Technical Information (ATI) program at the relevant intervals.<sup>138</sup> 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.<sup>139</sup>

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 ATI program in order to force them to license microprocessor-related technology that they developed and owned to Intel.<sup>140</sup> 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.<sup>141</sup> 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 ATI program, demanding the return of technical information, and deliberately creating uncertainty within the industry regarding

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136. Complaint at 2, In re Intel Corp., No. 9288, FTC (June 8, 1998) [hereinafter Complaint], available at <http://www.ftc.gov/os/1998/06/intelcmp.pdf> (on file with the *Columbia Law Review*); see generally Annabelle Gawer & Michael A. Cusumano, Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation (2002) (describing how Intel, Microsoft, and Cisco became leading platforms and challenges they face as a result).

137. Gawer & Cusumano, *supra* note 136, at 16–17.

138. Complaint, *supra* note 136, at 1–3; see also Agreement Containing Consent Order at ¶ I.C, In re Intel Corp., No. 9288, FTC (Mar. 17, 1999) [hereinafter Consent Order], available at <http://www.ftc.gov/os/1999/03/d09288intelagreement.htm> (on file with the *Columbia Law Review*) (describing Advance Technical Information program).

139. Consent Order, *supra* note 138, ¶ I.C.

140. Complaint, *supra* note 136, at 3.

141. *Id.* at 5.

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.<sup>142</sup>

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 ATI program. When Intergraph refused, Intel denied it access to crucial graphics technology.<sup>143</sup> 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.<sup>144</sup> When Intergraph again refused the royalty-free license, Intel allegedly again retaliated with exclusion from the information regime.<sup>145</sup>

The third complainant, Compaq Computer Corporation, then the largest maker of personal computers in the world, claimed that it had been excluded from the ATI program because of a suit against a computer systems manufacturer, Packard Bell Electronics, Inc., for infringing its patents.<sup>146</sup> 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 ATI 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.<sup>147</sup> Intergraph successfully resisted, but only by obtaining a preliminary injunction from a federal district court requiring Intel to permit Intergraph to participate in the ATI program pending resolution of the suit claiming patent infringement.<sup>148</sup>

In its settlement with Intel, the FTC was at pains to protect the ATI regime—broadly defined as encompassing all information “necessary to enable a customer to design and develop systems incorporating [Intel] microprocessors”—from abuse by any of the participants.<sup>149</sup> Paragraph II.A of the settlement expressly prohibits Intel from withholding or

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142. *Id.*

143. *Id.* at 6.

144. *Id.*

145. *Id.* at 7.

146. *Id.* at 8.

147. *Id.* at 5, 8.

148. *Id.* at 7–8.

149. Consent Order, *supra* note 138, ¶ I.C.

threatening to withhold advance technical information, or refusing or threatening to refuse to sell microprocessors to particular customers to obtain advantage in a dispute over intellectual property.<sup>150</sup> But conversely, the agreement protects Intel against (would be) customers or competitors seeking to use the ATI 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.<sup>151</sup> Thus, section II.B provides that Intel may withhold ATI from customers based on lawful business considerations unrelated to the intellectual property disputes.<sup>152</sup> For instance, Intel is neither required to provide ATI 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.<sup>153</sup> 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.<sup>154</sup>

In distinguishing between the ATI 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 *Lilly v. Emisphere* holding in contract; the FTC imposed a low-powered sanction designed to discourage Intel from deliberately manipulating the information sharing regime it established with chosen collaborators but did not require Intel to affirmatively share information with any other customers if it chose not to do so.

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150. Id. ¶ II.A.

151. Id. ¶ II.B.3.

152. Id. ¶ II.B.2.

153. Id. ¶¶ II.B.4–5.

154. FTC, Analysis of Proposed Consent Order to Aid Public Comment (March 17, 1999), at <http://www.ftc.gov/os/1999/03/d09288intelanalysis.htm> (on file with the *Columbia Law Review*).

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The preceding analysis of the function of the braiding mechanism in collaborative contracting suggests that the parties to such an 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 a proposed project is feasible. But formal enforcement should play no role in determining whether 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 collaborate faithfully over the conditions for achieving success. A refusal to proceed further if a party determines that a project has negative present value should not be grounds for declaring the contract in breach. The parties will agree to pursue the project whenever the collaboration yields a present value surplus, and not otherwise. The challenge, as in *Lilly v. Emisphere*,<sup>155</sup> 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 be designed only to give the parties sufficient opportunity to develop patterns of cooperation supported by switching costs. On this basis, the question for a court should primarily be one of character rather than capability: Has one party behaved opportunistically by reneging on its promised investment in open exchanges of information, and, if so, what remedy is appropriate?

#### IV. BRAIDING'S EXTENDED DOMAIN: FROM TECHNOLOGICAL TO ENTREPRENEURIAL INNOVATION

##### A. *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 techniques. 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. As we showed in Part III, 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, with less direct connection to technical development, are also appearing in commercial contracting, corporate acquisitions, and com-

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155. See *supra* Part III.A (discussing *Lilly v. Emisphere*).

plex construction projects, among other domains.<sup>156</sup> In these areas, too, parties increasingly realize that they must jointly invest in producing the information necessary to determine which, if any, of many possible projects will be profitable to pursue. Consequently, parties seek to distinguish their agreement on the process of disciplined co-evaluation from final agreement on an eventual project.

But, as might be anticipated in an emergent area of law, the decisions of courts called on to enforce braided contracts in this wider setting 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 for them to continue to pursue the joint project.<sup>157</sup> Other decisions contemplate (or at least invite the possibility of) the award of full expectation damages—that is, high-powered

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156. 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, e.g., Georgetown 19th Street Development, LLC & Turner Construction Co., Agreement (Apr. 1, 2003) (on file with the *Columbia Law Review*) (contracting for construction services). 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.

Id. art. 5.2. 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). Similar collaborative arrangements appear to be proliferating in business process outsourcing. E.g., New Century Financial Corp. & Accenture LLP, *The Professional Services Agreement* (Jan. 25, 2006), available at <http://contracts.onecle.com/new-century-financial/accenture-services-2006-01-25.shtml> (on file with the *Columbia Law Review*). The Agreement provides that Accenture will supply and periodically improve defined human resource services to New Century. Id. art. 6.1 (contracting to provide services); id. art. 7.4 (contracting to improve them). Moreover, under the Agreement, Accenture will conduct surveys of New Century employees to determine their level of satisfaction with the services provided. Id. art. 7.6. Furthermore,

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."

Id. art. 7.6(c).

157. See *infra* text accompanying notes 208–212 (discussing holding in *Tan v. Allwaste, Inc.* that failure to close on acquisition might breach duty to negotiate in good faith).

enforcement—for breach of the information exchange obligation.<sup>158</sup> 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 begin with decisions in nontechnology settings in which important elements of the governance structure—the low-powered formal sanctions that support informal enforcement—are implied by courts as default rules. We contrast the benefits of the approach pioneered by courts in technology contexts with the costs of imposing high-powered sanctions. Here, we address cases in which similarly situated courts either consider imposing damages for a failure to reach ultimate agreement, or consider imposing expectation rather than reliance damages when the collaboration protocol has been breached. The divergent approaches to formal enforcement in this broader context demonstrate that the courts lack a sound theoretical construct for determining (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.

## B. *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 will be a profitable commercial project.<sup>159</sup> 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 both proceed with their respective investments and nego-

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158. 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 would have been finalized. Expectation damages purport 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 *infra* text accompanying notes 220–221 (discussing threat of crowding out posed by awarding expectation damages).

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



tiate 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 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 a preliminary agreement that looks to the future exchange of private information is formally enforceable. The question is important because the parties meet as strangers with no necessary prospect of an ongoing 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 renegeing on the mutual commitment to collaborate. 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.<sup>160</sup> 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.<sup>161</sup>

Historically, preliminary agreements such as this would be unenforceable under the indefiniteness doctrine of the common law of contracts.<sup>162</sup> Recently, however, in a major shift in doctrine, courts have re-

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160. 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 Schwartz & Scott, *Contract Theory*, supra note 38, at 559–62.

161. For a formal model supporting this analysis, see Schwartz & Scott, *Precontractual Liability*, supra note 159, at 676–91.

162. Robert E. Scott & Jody S. Kraus, *Contract Law and Theory* 29–41, 299–303 (4th ed. 2007).

laxed 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.<sup>163</sup> This new rule responds to the increasing importance of the search for new partners to successful collaborations in an uncertain environment. The new rule starts with the presumption that preliminary agreements typically do not create fully binding contracts.<sup>164</sup> 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.”<sup>165</sup> 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

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[T]wo factual patterns typify unenforceable indefinite agreements at common law. The first, illustrated . . . by *Varney v. Dimars*, [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 [un]enforceable. 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.

163. The rule originated with the opinion of Judge Pierre Leval in *Teachers Insurance & Annuity Ass'n of America v. Tribune Co.*, 670 F. Supp. 491, 498 (S.D.N.Y. 1987). Judge Leval identified two separate types of “preliminary agreements.” *Id.* In Type I agreements, 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: At what point have the parties manifested an intention to be legally bound? *Id.* In contrast, Type II agreements concern “a binding preliminary commitment.” *Id.* These are the preliminary agreements we analyze here. In this latter case, the parties agree on certain terms but leave potentially 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. *Id.* This framework has been followed in at least thirteen states, sixteen federal district courts, and seven federal circuits. Schwarz & Scott, *Precontractual Liability*, *supra* note 159, at 664 n.7, 691–92.

164. See *R.G. Group, Inc. v. Horn & Hardart Co.*, 751 F.2d 69, 74 (2d Cir. 1984) (“[I]f parties do not intend to be bound by an agreement until it is in writing and signed, then there is no contract until that event occurs.”).

165. *Tribune*, 670 F. Supp. at 498.

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.”<sup>166</sup>

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 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,<sup>167</sup> the breadth of judicial 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 preliminary agreements should be enforced and what precisely is meant by enforcement.<sup>168</sup>

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 usefully supports the 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 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 only deploying low-powered incentives; that is, courts sanction only 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 who breaches its promise to invest collaboratively 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

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166. *Beazer Homes Corp. v. VMIF/Anden Southbridge Venture*, 235 F. Supp. 2d 485, 491 (E.D. Va. 2002) (quoting *Burbach Broad. Co. of Del. v. Elkins Radio Corp.*, 278 F.3d 401, 407 (4th Cir. 2002)).

167. See *supra* text accompanying notes 58–71 (describing experimental evidence of crowding out).

168. For discussion of what precisely is meant by the duty to negotiate in good faith, see *infra* Part IV.D.

informally.<sup>169</sup> 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.<sup>170</sup> The outcome in some of the cases, however, does tend to support the braiding hypothesis.

Consider first *In re Matterhorn Group, Inc.*<sup>171</sup> 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, signing 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.<sup>172</sup> 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.

In this case, the parties shared neither a prior history nor membership in a homogeneous community. Furthermore, they could not 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.<sup>173</sup> The court found that Swatch had breached a

169. See *supra* text accompanying notes 58–71 (recounting evidence of crowding out).

170. For an analysis of the litigated cases, see Schwartz & Scott, *Precontractual Liability*, *supra* note 159, at 691–702.

171. No. 97-8273 (SMB), 2002 WL 31528396 (Bankr. S.D.N.Y. Nov. 15, 2002).

172. *Id.* at \*16.

173. See *supra* note 160 and accompanying text (predicting opportunistic behavior by parties to preliminary agreements). 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. . . .

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]."<sup>174</sup> 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 will instead 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 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 & Research*.<sup>175</sup> 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.<sup>176</sup>

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.

*In re Matterhorn*, 2002 WL 31528396, at \*16–\*17.

174. *In re Matterhorn*, 2002 WL 31528396, at \*17; see also *supra* note 158 and accompanying text (arguing courts should not award expectation damages in similar circumstances).

175. No. M2000-02128-COA-R3-CV, 2002 WL 598567 (Tenn. Ct. App. Apr. 17, 2002).

176. *Id.* at \*1. 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

The parties did negotiate after one year, but they soon reached an impasse over the financial terms of the partnership.<sup>177</sup> 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 did not demonstrate such a breach by the practice group.<sup>178</sup>

The outcome in *Kandel* is consistent with the normative implications of the braiding hypothesis. The contemporary doctrine enforces preliminary agreements 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 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 for informal enforcement of the agreement to collaborate. However, 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 maximize surplus *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 eco-

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purchase price of such stock shall be based on the GAAP book value of the Employer as of the date of the purchase.

Id. (quoting parties' contract) (emphasis added).

177. 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. at \*2.

178. Id. at \*1.

nomic form does not guarantee that parties will achieve the objectives that led them to collaborate initially.<sup>179</sup>

### C. 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.<sup>180</sup> To highlight the breadth of the braiding concept, we turn now to an analysis of braiding in corporate acquisition agreements. At least on a first take, these agreements 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 that are supported by low-powered sanctions and explicit contractual obligations that are subject to the full panoply of formal enforcement mechanisms. In this respect, corporate acquisitions are like the joint research efforts between small pharma and big pharma discussed above. Though the time frame is telescoped in a corporate acquisition—with all of the investment taking place between the execution of the acquisition agreement and the closing of the transaction—the acquiring and target companies must still undertake a great deal of collaborative effort 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 as a consequence a braiding strategy becomes a potential means of addressing that risk.

A brief description of the structure of a corporate acquisition agreement provides an account of the stages, however time compressed, between the execution of the agreement and its closing. We 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.*, 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.<sup>181</sup>

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179. Note that in *Kandel*, the court found no bad faith. *Id.* at \*7. The facts tended 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. *Cf. id.* at \*1–\*3 (describing monetary dispute between parties).

180. See Gilson, Sabel & Scott, Contracting for Innovation, *supra* note 7, at 458–71 (discussing contracts to innovate); *supra* Part IV.B.1 (discussing open-ended agreements that might lead to extended collaboration).

181. 965 A.2d 715, 746 (Del. Ch. 2008).

1. *The Structure of a Corporate Acquisition Agreement.*<sup>182</sup> — 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 liabilities and pensions. When an acquisition agreement is executed and closed simultaneously, the agreement need contain little more than a warranties and representations article.<sup>183</sup> 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 for reasons such as the need for agency approval of the transaction, the need for filings with the SEC, or in connection with antitrust review. More importantly 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 as well as whether the conditions believed necessary to achieve contemplated synergies are present. As a consequence of these factors, mergers seldom close within ninety days of execution of the acquisition agreement and are sometimes delayed for as long as a year.<sup>184</sup>

Covenants and conditions bridge the timing gap between execution and closing. Covenants require or prohibit particular verifiable actions, such as complying with regulations or not declaring an unusual dividend. Conditions specify the circumstances that, when absent, permit the acquirer not to close. For example, a covenant may require that the target's representations and warranties are true, and that no material adverse change in the target's business has occurred. Thus, conditions 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. They may also relate to matters that are under the acquirer's control but that may be subject to the effect of exogenous changes in the business environment. For example, the acquirer may negotiate for the right not to close if it is unable to secure adequate financing.

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

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

184. Gilson & Schwartz, *Understanding MACs*, *supra* note 182, at 334.



In the period between execution and closing, both parties to an acquisition agreement need to make significant contemporaneous specific investments for 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 nonpublic 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 research and development 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.<sup>185</sup>

2. *Hexion v. Huntsman: Good Faith in Satisfying Conditions to Closing.* — *Hexion v. Huntsman*<sup>186</sup> illustrates the proper judicial role in assuring the functioning of a braiding contract that was embodied in a

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185. The post-execution/pre-closing activities in Hewlett-Packard's acquisition of Compaq illustrate the potential magnitude of transaction-specific investment integration efforts in a large transaction. Prior to closing, more than one thousand employees of both companies devoted more than one million hours to integration planning. Pui-Wing Tam & Scott Thurm, *Married at Last, H-P, Compaq Face Real Test*, Wall St. J., May 8, 2002, at B1. 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, *Merger by Numbers: An Elaborate Plan Forces H-P Union to Stay on Target*, Wall St. J., Apr. 28, 2003, at A1. At the employee level, the top three tiers of management were selected from among the two companies' managers well before closing. *Id.* At the same time, customers of both companies were the objects 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 this deal," [the customer] quotes one rival sales rep as saying." Scott Thurm, Pui-Wing Tam & Gary McWilliams, *Nail-Byter: H-P Claims Victory on Compaq Merger; Foe Doesn't Concede*, Wall St. J., Mar. 20, 2002, at A1. To the same effect, a post-execution/pre-closing survey of Compaq Unix customers showed that many would be "less likely" to buy from the merged company. Scott Thurm, *H-P, Compaq Plan the Details of Their Union*, Wall St. J., Jan. 25, 2002, at A13.

186. 965 A.2d 715 (Del. Ch. 2008).

definitive acquisition agreement. In this high visibility case, the Delaware Chancery Court enforced 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.<sup>187</sup> 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.<sup>188</sup> In the context of the Huntsman acquisition, the use of low-powered formal enforcement took on special significance in connection with 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 the unseen limit of its and the economy's expansion. The vigorous auction for the right to acquire Huntsman demonstrated that Huntsman had a good deal of bargaining power to shape the acquisition agreement powerfully in its favor.<sup>189</sup> It did so by dramatically limiting the conditions under which Hexion could elect not to close the transaction. Most importantly, the agreement did not contain a condition that gave Hexion the right not to close the transaction if it could not obtain the financing necessary to complete the acquisition.<sup>190</sup> Hexion may have been sanguine about this circumstance because it already had secured bank commitments to provide the necessary financing, although the banks' obligations to fund these commitments were conditioned on the banks receiving an opinion that the post-transaction combined entity would be solvent.<sup>191</sup> The absence of a financing condition was somewhat unusual, such omissions being 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 multibillion 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.<sup>192</sup> This termination fee, however, had one critical wrinkle, and this is where the acquisition agreement's braiding strategy came in: The agreement deployed

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187. *Id.* at 721, 723. This figure includes Huntsman debt that would have been assumed by Hexion in the transaction. *Id.* at 723.

188. See *supra* text accompanying notes 72-79 (describing braiding strategy).

189. 965 A.2d at 724.

190. *Id.*

191. *Id.*

192. *Id.*

low-powered formal enforcement in support of the pre-closing specific investments necessary for the success of a multibillion 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 in the realm of the material adverse change condition to closing, which allocates between the acquiring and acquired companies the risk of exogenous change between the execution and closing of the transaction.<sup>193</sup>

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.<sup>194</sup> In such a case, Hexion's actions would not give rise to any damages that would need 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.<sup>195</sup> Hexion still bore the risk of

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193. See Gilson & Schwartz, Understanding MACs, *supra* note 182, at 334–35 (explaining operation of material adverse change clause).

194. *Huntsman*, 965 A.2d at 736.

195. This narrowing of the MAC clause was accomplished by excluding from the exclusions changes that had a disproportionate effect on Huntsman compared to other chemical industry companies. *Id.* at 737. 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 identifying disproportionate results 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. *Id.* 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 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 having much better information when the standard ultimately is imposed *ex post* and thereby having the ability to select an accurate measure of the clause's operation. See *supra* text accompanying notes 34–36 (describing 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:

the occurrence of exogenous events that lowered the post-transaction value of Huntsman.

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 could also affect the closing of the transaction through the availability of financing. As we have seen, the parties addressed this issue by eliminating a financing condition. Nevertheless, 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 investments 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.

The parties accomplished this goal by creating 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.”<sup>196</sup> In

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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.

965 A.2d at 738 (footnote omitted). It is fair to say that Delaware courts have not offered a clear explanation for their hostility, which leaves two very interesting puzzles that 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 courts 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 court’s 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 either reduce the MAC to a series of rules or give the court more 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, 77 *Rev. Econ. Stud.* 937, 964 (2009) (“Equilibrium contracts in our model are incomplete for two reasons: *first*, the costs of thinking about how to complete them may exceed the expected benefits; and *second*, the costs of thinking about how to outwit the other agent also exceed the expected benefits.”).

196. 965 A.2d at 749.

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, and 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—i.e., to bring to bear both parties' specialized knowledge and experience in the effort to save the transaction—should a financing problem develop. If these efforts failed to persuade Hexion that 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.<sup>197</sup>

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 Hexion did.<sup>198</sup>

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.

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197. 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 nonperformance. Its efforts to do so included securing an unfavorable solvency opinion and circulating that opinion to the banks that had issued the financing commitment, all without notice to Huntsman and with the knowledge that doing so would make securing financing unlikely. *Id.* at 749–51.

198. *Id.* at 749 (footnote omitted).

[H]av[ing] . . . a justifiable good faith concern that it would not be able to provide the required 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. . . .

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.<sup>199</sup>

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, the satisfaction of which 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.<sup>200</sup> 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 termination fee that should have been paid, and \$425 million to settle tort claims that Hexion had disparaged Huntsman by asserting its insolvency.<sup>201</sup>

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199. *Id.* at 750.

200. *Id.* at 759 (“[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 obligations.”).

201. Jim Fotenos, *Hexion v. Huntsman*; The Settlement, M&A Litigation Commentary (Dec. 18, 2008, 9:51 AM), at <http://mandalitigationcommentary.blogspot.com/2008/12/hexion-v-huntsman-settlement.html> (on file with the *Columbia Law Review*). In addition, Apollo, Hexion’s controlling shareholder, agreed to purchase \$250 million in Huntsman preferred stock that would be redeemed in ten years. *Id.*

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 for 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,<sup>202</sup> 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. We show below that this same omission 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: Braiding formal and informal enforcement avoids the risk of crowding out by legally enforcing only the verifiable elements of the commitment to collaborate. By limiting formal enforcement to blatant (and thus verifiable) breaches of that commitment, courts will empower each party to observe and, if necessary, informally sanction any failure by a counterparty to invest sufficiently in pursuing the collaborative goal. We can underscore the importance of such a theoretical framework by pointing to the differences between the braiding mechanisms created by parties contracting for technological innovation and the enforcement mechanisms 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 when they have no theory, potentially disrupting the conditions for innovative collaboration under uncertainty.

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

We turn now to several cases dealing with letters of intent in the context of corporate acquisitions, each of which poses many of the same issues raised in the discussion of preliminary agreements, albeit in an acquisition context.<sup>203</sup> In *Huntsman*, the court reached the right result, but in the discussion that follows the courts seem to have lost their way, strug-

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202. Gilson, Sabel & Scott, Contracting for Innovation, *supra* note 7, at 458–71.

203. 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 1091.

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

1. *Tan v. Allwaste, Inc.* — *Tan v. Allwaste*<sup>204</sup> 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. Allwaste and Geotrack executed 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 did not have a deal until a formal agreement was executed."<sup>205</sup> 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, the success of which 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 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,<sup>206</sup> while Allwaste undertakes its investigation.<sup>207</sup> 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

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204. No. 96 C 3558, 1997 WL 337207 (N.D. Ill. June 11, 1997).

205. *Id.* at \*3.

206. See *supra* note 185 (discussing risk to seller of competitors' actions between execution and closing of acquisition).

207. Sellers in these acquisition agreements may also invest in the synergies that result from integration. See Gilson & Schwartz, *Understanding MACs*, *supra* note 182, at 334 ("The standard acquisition agreement, we argue, creates an incentive for the seller to invest in synergy . . .").



faith with Geotrack.<sup>208</sup> 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.<sup>209</sup> 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 transaction for reasons unrelated to the target's misbehavior.<sup>210</sup>

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.<sup>211</sup> 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.<sup>212</sup> Such an expansive interpretation of the good faith obligation and 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 for-

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208. *Tan*, 1997 WL 337207, at \*4.

209. 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. *Id.* Allwaste, however, 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 nondebt aspects of its financial condition that a debt-free acquisition would not protect against.

210. 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," a jury could conclude that it breached its preliminary agreement. *Id.* In other words, the court construed the obligation as prohibiting a change in one party's strategy.

211. 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. *Id.*

212. *Id.*

mal 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, thereby restricting 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. In the end, both reached the right result, but Chancellor Allen inflicted on the defendant a costly trial which he later acknowledged was unnecessary,<sup>213</sup> 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.<sup>214</sup>

In *VS & A Communications Partners v. Palmer Broadcasting Partnership*, 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 the seller to close the transaction on terms that the buyer alleges the seller could not in good faith have rejected.<sup>215</sup> 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

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213. *VS & A Commc'ns Partners v. Palmer Broad. P'ship*, No. 12521, 1992 WL 339377, at \*3 (Del. Ch. Nov. 16, 1992).

214. *Venture Assocs. Corp. v. Zenith Data Sys. Corp.*, 96 F.3d 275, 279–80 (7th Cir. 1996).

215. The case is unusual. Typically, the buyer elects not to go forward.

side of the transaction or the other. That risk inevitably exists until a party is legally bound.<sup>216</sup>

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 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.”<sup>217</sup>

The risk of trial, especially trial by 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 Corp. v. Zenith Data Systems Corp.*<sup>218</sup> 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, 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 so 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.<sup>219</sup>

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

However, if the potential damages are calculated in terms of a breach of an obligation to pursue the ultimate deal, the risk of trial becomes a serious threat to crowd out informal contracting, even if the charge to the jury is correct.<sup>220</sup> And here, Judge Posner expresses the view that the threat is real: “Damages for breach of an agreement to negotiate may be, although they are unlikely to be, the same as the damages

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216. *VS & A*, 1992 WL 339377, at \*9–\*10.

217. *Id.* at \*3.

218. 96 F.3d at 275.

219. *Id.* at 279–80 (citations omitted). Judge Posner does not address the broader point made by Chancellor Allen that changed conditions that have affected prices would allow sellers in good faith simply to decline to complete transactions.

220. See *supra* text accompanying notes 58–71 (discussing evidence of crowding out).

for breach of the final contract that the parties would have signed had it not been for the defendant's bad faith."<sup>221</sup> 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.

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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 the intuitions of experienced judges are, courts unguided by a theoretical framework are prone to err. Thus, in each of the cases 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 a 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 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*<sup>222</sup> and *FTC v. Intel*,<sup>223</sup> which 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

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221. *Venture Assocs.*, 96 F.3d at 278.

222. See *supra* text accompanying notes 127–133 (discussing *Lilly v. Emisphere*).

223. See *supra* text accompanying notes 140–154 (discussing *FTC v. Intel*).

risk, courts must be able to determine when the parties have undertaken a braiding obligation and what formal duties that obligation entails.

The new legal obligation to negotiate in good faith is unmoored because the cases do not indicate what the parties are supposed to bargain over, 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 multifactor 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.<sup>224</sup> The court, in addition, is required to consider the context of the negotiations resulting in the preliminary agreement.<sup>225</sup> A laundry list of relevant factors leaves the decision process largely obscure. This is particularly the case when courts fail to attach weights to the factors or specify the relationship among them.<sup>226</sup> 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 at least nominal 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 braid. 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.<sup>227</sup>

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 of whether 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

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224. Schwartz & Scott, *Precontractual Liability*, supra note 159, at 675–76.

225. See *Teachers Ins. & Annuity Ass'n of Am. v. Tribune Co.*, 670 F. Supp. 491, 500–01 (S.D.N.Y. 1987) (relying on context of negotiations to support conclusion that preliminary agreement bound parties).

226. Schwartz & Scott, *Precontractual Liability*, supra note 159, at 675–76.

227. 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. 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.

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 have 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.

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—societal—level has been a constant feature of social debate, beginning with Durkheim's demonstration in the late nineteenth 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.<sup>228</sup> Since then, social theorists such as Polanyi and

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228. As Durkheim wrote:

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.

Emile Durkheim, *The Division of Labor in Society* 211–16 (George Simpson trans., Macmillan Co. 1933) (1893); see also Jens Beckert, *The Great Transformation of Embeddedness: Karl Polanyi and the New Economic Sociology* 20 (Max Planck Inst. for the Study of Soc'ys, Discussion Paper No. 07/1, 2007) ("The development of modern capitalist societies, however, tends to destroy the contexts of trust that support cooperation

Bell,<sup>229</sup> 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 social cooperation too is endogenized and renewed even as the conditions of cooperation become more uncertain?

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in exchange in traditional societies. . . . These changed macrosocial conditions necessitate the development of new forms of embeddedness that are able to support trust between exchange partners.”).

229. Later variants of Durkheim’s insight include Polanyi’s idea that market relations can only be effectively regulated when “embedded” in society, Karl Polanyi, *The Great Transformation: Economic and Political Origins of Our Time* 57 (1944), 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, Daniel Bell, *The Cultural Contradictions of Capitalism*, 6 *J. Aesthetic Educ.* 11, 38 (1972).