

Scaffolding: Using Formal Contracts to Build Informal Relations in Support of Innovation*

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Abstract

In a study that follows in Macaulay's (1963) footsteps, we asked businesses what role formal contract law plays in managing their external relationships. We heard similar answers to the ones Macaulay obtained fifty years ago from companies who described important but non-innovation-oriented external relationships. But we also uncovered an important phenomenon: companies that described innovation-oriented external relationships reported making extensive use of formal contracts to plan and manage these relationships. They do not, however, generate these formal contracts in order to secure the benefits of a credible threat of formal contract enforcement; instead, like Macaulay's original respondents, they largely relied on relational tools

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such as termination and reputation to induce compliance. In this paper we first present examples of this phenomenon from our interview respondents, and then consider how conventional models of relational contracting can be enriched to take account of a very different role for formal contracting, independent of formal enforcement. In particular, we propose that formal contracting—meaning the use of formal documents together with the services of an institution of formal contract reasoning—serves to coordinate beliefs about what constitutes a breach of a highly ambiguous set of obligations. This coordination supports implementation of strategies that induce compliance—despite the presence of substantial ambiguity *ex ante* at the time of contracting—with what is fundamentally still a relational contract.

“Have I ever thought I would end up in court?
No! We have spent a lot of time on [the
contract] and neither party has any intent to use
this contract...”

High-tech consumer electronics executive

“I cite contracts all the time...”

Same high-tech consumer electronics executive

1 Introduction

When close to 45 years ago Stewart Macaulay (1963) asked, “What good is contract law?” his research suggested that it mattered a lot less than expected. His study of 43 businesses in Wisconsin found that companies often fail to plan transactions carefully by providing for future contingencies, and seldom use legal sanctions to address problems during exchange. Written contracts, he found, were often highly standardized documents that were largely confined to the drawer once drafted by the legal department and then rarely consulted to resolve disputes. His results are still among the most highly cited in the literature of law, economics and organization.

Macaulay's work raised a theoretical puzzle for economists, particularly in light of the growth of the literature exploring principal-agent models and mechanism design: how are the incentives of contracting parties secured in business relationships that require commitments over time if not by formal court-ordered penalties? Attention to this puzzle spurred key developments in the economic theory of contracts and organizations, specifically the analysis of incomplete, self-enforcing and relational contracts. Early work in this literature includes Alchian and Demsetz (1972), Goldberg (1976) Klein, Crawford, and Alchian (1978) Williamson (1979), and Kreps (1990). This theoretical literature emphasized two key points originally identified by Macaulay: the centrality of the problem of adapting to unforeseen events that emerge after a contract is formed and the important role played by non-contractual enforcement mechanisms such as reputation and loss of future revenues or quasi-rents to secure contractual compliance. (A different branch of this literature, grounded in Grossman and Hart (1986), focuses on the allocation of property rights over assets as an alternative solution to the problem of adaptation and obstacles to complete contingent contracting.)

Macaulay's respondents included American business giants such as General Electric, S.C. Johnson and Harley Davidson¹, companies that typified the large vertically-integrated multi-unit firms of the mid-20th Century analyzed by Alfred Chandler in his seminal work, *The Visible Hand* (1977). They operated within large, well-developed industrial settings and relatively stable competitive environments. Macaulay's explanation for how these enterprises managed critical relationships with customers and suppliers appealed to the presence of well-established norms for interpreting and adjusting contractual obligations in stable markets for standardized goods:

Most problems are avoided without resort to detailed planning or legal sanctions because usually there is little room for honest misunderstandings or good faith differences of opinion about the nature and quality of a seller's performance. Although the parties fail to cover all foreseeable contingencies, they will exercise care to see that both understand the primary obligation on each side. Either products are standardized with an accepted description or specifications are written calling for production to certain tolerances or results. Those who write and read specifications

¹Private communication, Stewart Macaulay.

are experienced professionals who will know the customs of their industry and those of the industries with which they deal. Consequently, these customs can fill gaps in the express agreements of the parties. Finally, most products can be tested to see if they are what was ordered; typically in the manufacturing industry we are not dealing with questions of taste or judgment where people can differ in good faith. (Macaulay 1963, 62-63.)

This approach to gap-filling has been adopted by much of the literature on incomplete and relational contracts (Telser 1980; Klein and Leffler 1981; Holmstrom 1981; Bull 1987; MacLeod and Malcomson 1988; MacLeod and Malcomson 1989; Baker, Gibbons, and Murphy 1994; Klein 1996; Klein 2000; Bernheim and Whinston 1998). In the models developed in this literature it is presumed that contracting parties—whether within or between firms—can develop a shared and unambiguous understanding of what counts as contract performance, even if they cannot convert that understanding into an express contract term enforceable by a court. The literature thus often frames the problem of incomplete contracting in terms of the capacity for proof about the state of the world or actions taken: states and actions that are observable but not verifiable can form the basis of a relational contract but not a legally-enforceable contract (Hart and Moore 1988). Parties may not be able to articulate what counts as cheating but they know it, and agree on it, when they see it. The relative roles played by formal contracts and what Macaulay called non-contractual relations, then, are driven in this approach by the capacity for proof. In legal language, we would say that the parties agree on the law (what performance is owed) and only face disagreements or difficulties of proof with respect to the facts (what performance was delivered). Macaulay’s observations in this framework amount to a finding that, at least in well-established, relatively standardized and relatively stable relationships, industry norms guide parties to agree on what performances are owed and the facts are relatively easy for industry insiders to discern. This tracks the theoretical literature on repeated games: parties agree on what it means to cheat and even if not verifiable to a court, cheating is observable.

This well-established Macaulay-inspired framework for analyzing contracts presents us with new puzzles in the context of relationships aimed at innovation. Relationships such as these are subject to pervasive uncertainty: about the attributes of any ultimate collaboration and/or about the features of the competitive environment in which the fruits of collaboration

will be deployed. In the modern economy, characterized by widespread de-verticalization (Langlois 2003; Lamoreaux, Raff, and Temin 2003) and the corresponding increase in contracting, such relationships are pervasive. Examples include arrangements such as:

- a co-development or milestone acquisition agreement between a biotech startup and pharmaceutical manufacturer
- joint product development efforts between a specialized chip manufacturer and a software vendor
- a research and development component to a supply contract between an automobile manufacturer and a supplier
- collaborative service innovation between a business services start-up and a database system provider

As Gilson, Sabel and Scott highlighted in a pair of important papers (2009, 2010), pervasive uncertainty drives contracting in innovation-oriented arrangements heavily in the direction of incompleteness, as it becomes more and more difficult to anticipate and provide for future contingencies in a way that courts can readily interpret and enforce. In the conventional framework, this would lead us to predict that we would see reduced reliance on court-enforceable contracts and increased reliance on relational contracting mechanisms.² That is, we would predict that in innovation-oriented relationships we would see what Macaulay saw: little use for formal contract law.

But there is a problem with this prediction. The businesses Macaulay studied, in turning away from formal contract, turned towards well-established

²We might also predict, drawing on the original (Williamson 1975) framework, greater integration into the R&D function as the costs of contracting rise relative to the costs of hierarchy. Our focus in this paper is on the characteristics of contracting for innovation and we abstract from the question of when contracting will be preferable to integration. Empirically, however, it does appear that firms are increasingly relying on collaborative relationships for innovation, pursuing what Henry Chesbrough (2003) calls “open innovation.” One reason for this may be that innovation is more likely to occur when there are diverse sources of new ideas. Holmstrom (1989) suggests that innovation is more likely to take place in smaller firms because the costs of integrating across routine and innovative tasks is high. Langlois (2004) argues that specialization in different capabilities (such as individual components of a computer) lowers the cost of innovation and makes contractual innovation superior to integrated innovation.

industry- (and sometimes product-) specific norms to govern their relationships. They looked to these norms to determine what had been promised, whether it had been delivered and what was an appropriate adaptation to unexpected events. In the context of innovation, however, it is unlikely that such extra-legal norms exist. The products in question are likely to lack pre-existing and well understood engineering specifications. The organization of production may itself be undergoing upheaval such that there are no models providing standard relational solutions to unexpected events. High degrees of specialization, in the collaborating firms as well as in the design of their collaboration itself, may also imply the absence of standard and shared ways of responding to change. And the rapid rates of change implied by persistent innovation undermine the capacity for market actors to settle on shared understandings. In settings like this we are likely to find what Macaulay did not: widespread and often good faith disagreements about what constitutes proper performance or an appropriate response to new events. The innovation context is one in which individual judgment that differs from conventional thinking takes center stage.

The conventional approach to the choice between formal and relational contract, then, presents us with a theoretical dilemma: parties cannot rely on formal contract enforcement to support their arrangements because of the obstacles to generating express detailed agreements based on verifiable events and yet they also cannot rely on established relational norms about what is acceptable conduct because such norms are unlikely to exist.

In this paper, we present some preliminary evidence of how parties engaged in innovation relationships are resolving this dilemma in practice. Following in Macaulay's footsteps, we conducted semi-structured interviews with 30 businesses in California and asked them to discuss how they managed an important external relationship. Did they draft formal contracts? What role did any formal agreements play in responding to issues that arose in the relationship over time? Did they resort to litigation or threats of litigation to resolve disputes? Although we initially set out to ask all of our respondents about external relationships that they felt were important to their innovation efforts, forty percent of our respondents told us that they didn't think of their companies as innovative and so had no external relationships they felt played an important role in innovation. We asked these respondents instead about an external relationship that they felt was important to their business success. The remaining sixty percent told us about how they managed an external relationship that was important to their innovation as a company.

From the respondents who described an important but not innovation-oriented external relationship, we obtained answers that replicate those Macaulay obtained. For these relationships, respondents had little use for formal contracts: they either did not generate them or relied only on standardized documents; they ignored any formal agreements when resolving relational difficulties; and they relied not on litigation but on informal means of enforcement—reputation and the threat of cutting off future business—to secure compliance.

The respondents who told us about an external relationship that played an important role in innovation, however, presented an important twist on Macaulay’s results. On the one hand, as we would predict in a setting beset by high levels of uncertainty and incompleteness, these respondents reported that they made little use of litigation or even the threat of litigation to secure compliance. Like Macaulay’s businesses in the 1960’s, they said they had little use for litigation and court-ordered dispute resolution. They did not merely settle their disputes in the shadow of the courthouse (Mnookin and Kornhauser 1979), they ignored the courthouse. But on the other hand, unlike Macaulay’s respondents, these respondents described heavy reliance on formal contracts and legal advice in the initial stages of the relationship and frequent reference to formal agreements and legal interpretation of documents to manage behavior during the life of the relationship.

Our interviews thus identify an important phenomenon that has been overlooked in the literature on relational and formal contracting: the use of formal contracts to structure an external relationship important to innovation, apparently for reasons other than court enforcement. This is not to say that parties writing formal contracts never make use of (the threat of) formal court enforcement. But we clearly heard of many cases in which parties found it valuable to write and reference a formal contract despite a clear belief that a threat to seek court-ordered penalties for breach was not credible. We present examples of this phenomenon in Section 2 of the paper.

We have thus uncovered a new puzzle in relational contracting. What could explain the resort to costly formal contracting if not the formal enforcement threat that goes along with it? In Section 3 we examine the existing accounts of relational and incomplete contracting in the literature and consider how well they line up with what we heard from our respondents. We then propose, in Section 4, our theoretical account of the role of formal contracting in a setting in which parties expect to rely exclusively on informal means of enforcing obligations. Our explanation shares important features with Macaulay’s original account of the role played by industry norms

in supporting commitments and adaptation in a contractual relationship. We draw, however, an important distinction between *formal contracting*—meaning the creation of formal contract agreements and the use of formal legal advice to manage a contractual relationship—and *formal contract enforcement*—meaning resort to formal court procedures to obtain court-ordered remedies. These two features of formal contracts are currently conflated in the relational contracting literature. Formal contracting, we argue, is valuable even when formal contract enforcement is not. In our framework, formal contracting provides essential *scaffolding* to support the beliefs and strategies that make informal means of enforcement such as reputation and the threat of termination effective. Whereas Macaulay’s respondents looked to industry norms to determine what counted as performance and what counted as breach in their efforts to adapt to circumstances, our innovation-oriented respondents, we suggest, looked to formal contract reasoning and advice from experts schooled in that reasoning (lawyers).

Our account emphasizes the classification function of law to coordinate the beliefs and strategies involved in informal mechanisms of enforcement (Hadfield and Weingast 2012). This function is critical, we claim, precisely in the context of innovation-oriented relationships where ambiguity about what counts as performance and breach is likely to be high and established industry norms are likely to be absent to resolve ambiguity. We relate the scaffolding function of formal contracts to the game theoretic analysis of contract enforcement that we find in the relational contracting literature generated by Macaulay’s original paper.

2 Interviews: What we learned

To investigate how businesses manage highly collaborative innovation-oriented relationships subject to uncertainty and ambiguity, we conducted informal, semi-structured interviews with businesses in California. Participants were recruited both by cold-call of businesses in the San Francisco and Los Angeles areas, drawing from the National Establishment Time-Series (NETS) database, and through personal contacts of the investigators. The resulting sample includes a wide variety of businesses in terms of size, activity, number of employees, and years in operation. See Appendix A. Interviews of 45 minutes to 2.5 hours interviews were conducted.

We set out in this research to learn about if and how businesses use

contracts to structure external relationships that play an important role in innovation. At the beginning of each interview, therefore, respondents were asked whether the business they are part of can be classified as innovative or whether other businesses in the industry would consider them to be innovative or not. Interviewees were asked to think beyond product innovation and to consider innovative practices in terms of production processes or organizational structure as well. It soon became clear that many businesses randomly drawn from a population of enterprises do not consider themselves innovative, even in a broadly-defined sense. We therefore supplemented our randomly selected companies with companies that we expected were involved in innovation in some dimension and indeed many of these classified themselves as innovative. Of our final sample of 30 businesses, 18 self-identified as innovative and 12 self-identified as not innovative.

We asked respondents to describe the importance of external relationships for the success of their business. If the company self-identified as innovative, we asked about those external relationships that were perceived to play an important role in innovation. If the company self-identified as not innovative, we asked about external relationships perceived to play an important role in the business overall. These latter relationships involved important customers or suppliers. These questions explored the nature of relationships, their history, risks involved, and any mechanisms used to manage them. A particularly illuminating set of questions that allowed us to learn more about external relationships dealt with dispute resolution. Interviewees were asked to identify an example of an important recent dispute, what it entailed, and how it was resolved. This was helpful in learning about businesses' strategies for problem solving and their expectations for what role contracts could play in this process. Together, these questions allowed us to peer into businesses' own interpretation of what contracts can accomplish and how important they are for managing risks. Most importantly, they allowed us to gauge the degree to which they relied on formal contracting and formal enforcement to maintain external relationships crucial to their innovation or day-to-day business activities.

Our interviews uncovered rich stories that closely parallel Macaulay's findings from his seminal 1963 study. Macaulay showed that when it came to setting up exchange relationships, businesses often planned very little, especially with respect to legal sanctions and consequences for defective performance. Rather than relying on detailed formal documents to carefully plan out exchange, they preferred to rely on "a man's word" or a handshake

to cement the terms of the agreement. If contracts – detailed formal agreements that explicitly and carefully defined terms of performance, effects of contingencies, effects of defective performance, and legal sanctions – were used, they were boilerplate agreements with standardized terms and conditions. Obligations of the parties in an exchange were often adjusted without reference to the terms of the original contract and breaches were resolved without the threat of litigation. When problems arose, parties would find a solution “as if there [had] never been any original contract” (Macaulay 1963, 61). Lawsuits for breach of contract, as well as explicit or implicit threats to sue unless parties came to a mutually agreed upon solution, were rare.

Similar to Macaulay’s findings, a significant share of our respondents tend largely to ignore formal contract law, ignore formal contracts in resolving transactional issues, and rely instead on informal contract enforcement mechanisms to ensure compliance and achieve joint-optimizing outcomes. The respondents who echoed Macaulay’s respondents, however, were those who said their companies were not innovative. These were respondents who spoke to us about a non-innovation-oriented external relationship. In contrast, those who were able to talk to us about external relationships playing an important role in innovation told us a different story, one that differed in important ways from Macaulay’s findings. We describe the responses from these two different groups separately below and use the labels “innovators” and “non-innovators” to track them. We emphasize, however, that we are not describing differences between how innovative and non-innovative businesses engage in contracting, writ large. We asked innovators specifically about how they manage external relationships that are important for innovation; these companies undoubtedly also have external relationships that play little role in supporting their innovation agenda and they may well manage those relationships in the same way that our non-innovators do. The distinction we are drawing attention to is the difference between the management of relationships that take place in an innovation context and those that do not. Our results identify a phenomenon that appears to be related to the special problems for contracting posed by innovation, one that apparently is not explained by a secular change in contracting practices from Macaulay’s time to today.

2.1 Contracting in non-innovation-oriented relationships

The twelve businesses that said they were not innovative were asked to discuss external relationships that were important for their overall business success. These businesses spoke to us about relationships with important customers and suppliers. Their responses closely tracked the responses Macaulay heard from Wisconsin businesses in the early 1960's. And indeed, these businesses appear to share many characteristics with Macaulay's respondents. They were engaged in the sale or manufacturing of relatively standardized products such as candies, brake systems, motorcycle wheels, plastic bags and undergarments. These are products that have characteristics that are relatively easy to define and assess. The success of a relationship involving these products is easy to verify: Was the right candy formula delivered; was a bag of the correct color produced; was the clothing done with the correct design and material? Like Macaulay's businesses, the non-innovators we spoke to routinely faced unplanned-for contingencies and the problem of relational adaptation. But rather than resorting to contractual terms to devise a response, these businesses, like Macaulay's, looked to informal processes and norms. In managing important external relationships, these businesses said they made little use of formal contracting, rarely referred to formal contracts in dispute management, and they almost never litigated, or threatened to litigate, to enforce obligations.

We present examples of the responses we heard from non-innovators below grouped in accordance with Macaulay's key findings. Additional examples are found in Appendix B.

2.1.1 Little use of formal contract

While they may have a formal written contract for a lease or for protection of intellectual property, most of the non-innovator respondents spoke of relying on verbal agreements or emails for initiating exchange. They often spoke of sending out and receiving orders as opposed to contracts. Any formal documents they did use were either brief or standardized.

Really, we have no written contracts that obligate us to purchases or anything like that. We call up a place and order over the phone aluminum and steel wire like all other customers. . . we have never really written out contracts or that sort of thing. We have hooked up suppliers and gotten other stuff done with people coming in

and not demanding that they sign a contract from our end. We won't produce those. (motorcycle wheel manufacturer)

While they appreciated that some of the written formal documents they used include standardized terms “on the backs of the forms” these respondents did not consider them to be formal written contracts that create an opportunity for formal enforcement. Most of the companies were unaware of the terms stated by their partners’ purchase orders. The contract term most frequently mentioned by respondents was the payment term while the rest were described as “pretty basic” or “standardized” or “what everyone else has.” In situations in which both the respondent firm and their partners signed forms in the same exchange, there was a complete lack of understanding as to whose terms were governing the exchange or whether any issues of conflict or overlap existed in the forms signed by all parties. Like Macaulay’s respondents, regardless of the terms and conditions expressed in formal purchase or sale documents, this group of businesses spoke of placing or canceling orders, not forming or breaching contracts.

Most of the respondents in this group indicated that they would prefer to design their agreements without the assistance of lawyers. Lawyers were perceived as untrustworthy and somewhat clueless in the ways of business. In addition, relying closely on lawyers to design contracts was thought to signal distrust of the other party. The focus on legal liability was perceived to be an impediment to business because the lawyer’s involvement stands in the way of reaching agreements. From the perspective of these firms, formal legal advice does not create value; it destroys value.

Lawyers are usually overreaching. You ask them to review [a deal] and just make sure that legally the bases are covered. They don't understand those instructions. They don't. Well, some of them do, but they are the good ones. Most lawyers feel that their job is to protect you from yourself. . . It's not just that they want to present the right legal framework. They are actually changing the terms. I can agree on the deal with [a partner's] marketing people but then it goes to their legal and they change the deal to something that I can't accept. . . (brake manufacturer)

2.1.2 Little reference to formal contract terms to resolve transactional issues

Just as Macaulay found in the early 1960s, we found that businesses involved in important but non-innovation-oriented external relationships paid little attention to formal contract terms when resolving problems in the relationship.

[Distributors] have pretty extensive contracts that we sign with them for exclusivity. Those are the only really negotiated things and it's such bullshit. No one ever looks at the things... You spend all this time, energy, effort, money, moving one comma to one side, and the other to the other side. And then you throw the thing in the drawer... (candy manufacturer)

Instead, these businesses looked to industry and relational norms to adapt to contingencies and respond to the behavior of their contracting partners. A clothing manufacturer, for example, told us that their order forms played little role in determining what would happen if the customer changed its mind and wanted to cancel an order. According to the formal terms, the customer was obligated to take and pay for the order the company signed for, with no option to cancel. But in fact the relationship between the manufacturer and its customers allowed for significant accommodation to circumstances in which the customer no longer wanted the ordered goods. If production was still in the early phases, such that cancellation would not cause the manufacturer to incur significant losses, the customer would be allowed to cancel. If manufacturing of an order had progressed significantly, the customer would be asked to take the partially completed merchandise at discount or to find alternative use for the clothing already produced, even if it required additional processing. This same clothing manufacturer's order forms stated that when the customer received the order it was required to issue payment within 30 or 60 days. In practice, however, if the customer's customers (major retailers) refused the clothing because they decided to go with a different style, the clothing manufacturer reported that he and his customer informally would agree to absorb the cost of the lost sale. The clothing would either be restyled and sold to other retailers or the two companies would split the loss. None of these arrangements are specified in the order forms—even with vague terms about best efforts or reasonable accommodation.

As our clothing manufacturer explained to us, the ability to ignore the contract and “go off-script” is tremendously important in his line of business

because the company needs to be able to respond to negative market shocks faced by them and their partners in order to ensure the viability of their long-term business relationships. Not only is going off-script important for dealing with problems after the orders are completed but not following the terms and conditions set in the order forms allows the business to respond more quickly to the needs of their customers. This quick response time allows their customers to compete more effectively to secure business from major clothing retailers. A customer will often indicate that they will need a particular order fulfilled, and they will share as many details as they have available at the time from the retailers, so that the clothing manufacturer can start ordering the right materials. This occurs before any work is formally ordered but it allows the clothing manufacturer to shorten the delivery time for his customer's clothing to the major retailer.

If we did everything by contract it would basically slow us down; it just won't work in our business. We would not be able to call, pick up the phone and say: hey, I have this order coming in, please get the materials ready (clothing manufacturer).

Such problems in exchange are not uncommon and businesses in this group of respondents, like Macaulay's respondents, also told us that they were often guided not by formal contract terms but by well-understood prevailing industry-specific practices or informal business norms in deciding how to resolve them. A shopping bag manufacturer told us that in this industry when an order is correctly fulfilled but the customer made a mistake in the order, the prevailing norms specify that the customer is obligated to accept the product. The manufacturer could choose to offer a discount on the merchandise but was not obligated to do so. In the clothing manufacturing industry, in contrast, if the customer has made a mistake in ordering, but the manufacturer has failed to double-check with the customer, the manufacturer absorbs all the losses. In the spoke manufacturing and wheel assembly industry, we were told that the prevailing norms suggest that it is the manufacturer's obligation to verify the quality standards of the materials received for manufacturing and it is the seller's obligation to replace any defective materials. However, the seller is not obligated to pay for the cost of any products manufactured with defective materials. It is accepted that the manufacturer is at fault for using materials whose quality was not verified prior to use.

None of these practices are reflected in a formal contract, according to the respondents. The formal contracts—the purchase or sale order form(s)—sit

dormant and the parties rely on prevailing norms or common understanding to address any problems in exchange. Past practices and norms, and not the contract, are the reference point for judging the quality of partner's effort and direct, open communication is key to problem solving.

We talk to everybody, it's all... it's mostly conversation. I got a problem I call somebody; I call somebody on the phone and we deal with it... It's all trust. (undergarments manufacturer)

An independent film company executive jokes that he was known as a "page 15 guy" because his contracting partners would send him only the signing page which he would return and the partners would attach it to whatever contracts they had drafted. The executive explained why he ignored the contract terms he was ostensibly "agreeing" to in formal documents:

I don't care because I know that if I had a dispute about the deal, I'd go to [the partner] and say: you know the spirit of our understanding, so I don't care what's in the contract; I care about what you and I agreed to, like in the old mafia, with a handshake. (independent film company)

2.1.3 Reliance on informal enforcement mechanisms

Respondents in this non-innovator group clearly did not see courts as a significant means of enforcing contractual obligation. They avoid litigation. When asked, our respondents said that they avoided litigation because of its high cost and uncertainty about whether the cases would be resolved in their favor; they perceived this as a substantial risk even if they were clearly in the right. Even if cases were resolved in their favor, our respondents said they expected the cost of legal fees far to outweigh the benefit of damages obtained through a court award or settlement. Litigation was largely seen by these respondents as an unrealistic means of enforcement.

These respondents instead turned to the types of informal enforcement mechanisms that Macaulay found. They sought out partners they trusted and relied on a tendency for people to follow industry norms and to take care to avoid earning a bad reputation or losing a valuable business relationship.

There is no formal contract. All I have is an agreement [for partners] not to make certain formulas that are proprietary... I

mean, they are “proprietary” in the sense that [our partners] aren’t gonna jeopardize their business with us [by making] a similar tasting [candy]. (candy manufacturer)

We will be stronger if we treat them well, pay them on time, and they will follow us too. There’s other people like us. And look, we don’t like the way we’re being treated, we’ll go somewhere else. So we have choices also. (clothing manufacturer)

2.2 Contracting in innovation-oriented relationships

The picture that emerges from interviews with the businesses that disclaimed involvement in significant innovation tracks the picture Macaulay painted in 1963, a picture that has informed major developments in the literatures on incomplete contracting, relational contracting and organization. We note that the picture must be one that economists and other organizational scholars find *a priori* compelling, given the relatively weak empirical evidence Macaulay provided—and acknowledged—in his self-consciously titled “Preliminary Study.”

Our preliminary findings, however, suggest a very different picture among respondents who described their businesses as innovative and who spoke to us about how they managed external relationships critical to their product or process innovation. These were relationships with collaborators, customer focus groups, contributors, competitors, venture capitalists, partners for outsourcing, and joint venture partners. They included the relationship between a biotech startup and a pharmaceutical manufacturer involved in the execution of a milestone acquisition agreement, a collaboration between an online platform connecting users with expert knowledge and a firm that provides identity-verification services, and a joint-product development agreement between a specialized circuit manufacturer and a software developer. In these innovation-critical relationships, the picture of contracting overlaps with Macaulay’s in only one dimension: these businesses perceived formal contract litigation as a very unlikely instrument for enforcing compliance with contractual obligations. They, like our non-innovators, said that they relied heavily on informal means of assuring performance—reputation and the threat of terminating a relationship. But this is where the overlap ends. For despite eschewing formal contract enforcement methods, these respondents relied extensively on formal contracting to plan and manage their

innovation-critical relationships. We present this picture below. (Again, additional examples from our interviews are provided in Appendix B.)

2.2.1 Significant reliance on formal contracting

Contrary to the practice of businesses that Macaulay spoke to, many of the businesses in our innovator sample did not turn away from contractual mechanisms when structuring their innovation-critical relationships. These businesses told us they invested significant time and resources to explicitly and carefully plan and generate formal contracts dealing with obligations and contingencies. Lawyers, many said, were always consulted in the course of preparing and designing written agreements.

Yeah, we definitely have a formal contract in place. . . The contract was signed after we had negotiated all of the business terms. . . before we started, for sure. Before we did anything to get the business relationship in the works, we signed the contract. So we negotiated everything, all the business terms, all the legal terms, and then we got started. We have made amendments to it mostly for pricing, and some expansion of services. (online expert knowledge platform)

Formal documentation of an agreement is important both at the outset and through the course of the innovation-oriented relationships we learned about. These respondents report relying on various mechanisms to continually update the formal contract to track as much as possible their changing relationships. To add “fluidity” to contractual mechanisms, an advertising agency executive relies on a communication system with his clients that carefully records client’s feedback and references any changes to the workload as an addendum to the original contract. To secure and monitor commitment in dynamic relationships involving IT services, a production company relies on service level agreements that reference the original contract but allow for much more refined definition of performance benchmarks and mechanisms for ensuring compliance with the overall service obligations. To protect specific assets while exploring ongoing possibilities for collaboration, an information technology firm, an optical systems manufacturer, and an online business service provider all report that they rely on non-disclosure agreements and written memoranda of understanding with their contractual partners in which

any communicated information and ideas are referenced in explicit written form.

2.2.2 Formal contracts frequently referenced in solving problems

The formal contracts that the businesses involved in innovation-oriented relationships spend significant resources to create and amend are not documents that lie dormant in a drawer once they have been drafted. Instead, we heard, they are frequently consulted by these businesses to understand their own obligations and those of their partners. They are expressly brought out to help settle disputes that arise during the course of the relationship.

I cite contracts all the time; you are in breach of this and that. . . but I've never actually said we are going to use the contract to extract something from you and enforcing it in a court of law. I have never done that. (high-tech consumer electronics)

The contract gets dusted off frequently. (logistics services)

2.2.3 Reliance on informal enforcement

Despite the significant attention paid to drafting, amending and consulting formal contracts, businesses in our innovator group clearly did not expect to use them to obtain formal contract enforcement. This was not merely a prediction that they would be able to resolve their differences successfully in the shadow of a litigation threat, in the spirit of Mnookin and Kornhauser (1979). Rather, they viewed litigation as simply not presenting a credible option for enforcement. Litigation, they told us, is prohibitively costly and associated with reputational harm that is not compensated by potential court-awarded remedies. The legal process takes too long, particularly relative to the speed with which their business moves. Court-awarded damages, they said, are unlikely to adequately capture the value of joint technology³ and projected profits. Even if awarded, damages, they told us, are next to impossible to collect and very likely to be surpassed by legal costs.

³Note that liquidated damages are different from court-awarded damages in that they are like any other term in the agreement: failure to pay liquidated damages in the event of a breach is also a breach of the agreement—and hence can be the subject of informal enforcement.

The threat of litigation is not necessary for the other aspects of enforcement to work. It helps having the possibility out there but everybody knows that nobody wants to go to court. (high-tech equipment provider)

Have I ever thought I would end up in court? No! We have spent a lot of time on [the contract] and neither party has any intent to use this contract because by the time you get to the point where you are [going to court], now you have a public relations issue. We are a consumer electronics company. You view those kinds of things... it has impact far beyond the contract: other people don't want to do business with you, you could stifle innovation, you could have a public relations or consumer products problem ... (high-tech consumer electronics)

Our respondents did indicate that they might end up in court over major bet-the-company problems. But the threshold would appear to be very high and perhaps never crossed for many companies. Even in some cases of major losses, litigation was seen as of limited value. The laser inspection system manufacturer explained to us, for example, that even if his customers or competitors obtain and copy his technology, he is unwilling to consider litigation as a recourse because of exorbitant legal fees and the inability to prove damages in terms of lost profits. Instead of relying on legally enforceable patents, this executive uses less formally structured confidentiality agreements and has no intention of enforcing these in court. Some of our respondents in fact spoke of using formal legal documents, such as memoranda of understanding and non-disclosure agreements, despite well-known or routine obstacles to the enforceability of such documents.

[You find yourself] calling these lawyers [for advice in the context of a dispute] who say these are non-enforceable contracts... I always hear lawyers say: don't do MOUs - memoranda of understanding - they are worthless; they are not legally enforceable by law. Well they're right. They are not. But that's not why we're doing it. This memorandum of understanding - it's a memo that says what we've been talking about, what we agreed to, and we want to be clear with each other. So it's all about clarity... and so those types of things become useful instruments for communication clarity. [Even if they] become a contract; well, I'd argue

they are still for communication clarity. (online collaboration platform)

As we read this evidence, our respondents are not merely reporting that they bargain in the shadow of the law and hence rarely end up in litigation in fact. They are reporting that it is common knowledge that litigation is almost always an empty threat: outside of bet-the-company type settings, it costs too much in legal fees and reputational damage, it takes too long and/or it is too unpredictable. We read this as evidence that these businesses are not relying on the threat of court-ordered penalties for breach to secure contract performance.

Instead of relying on formal enforcement of their formal contracts, these innovators turned to extra-legal enforcement mechanisms much like the ones Macaulay identified: contract breach is penalized by the loss of a valuable relationship or reputational harm. An online collaboration platform executive, for example, told us that the best mechanism for ensuring contract compliance is the “mutual dependency” which serves as the “real deterrent” against malfeasance. When both parties depend on each other to achieve a joint-profit maximizing outcome, the self-interest of the contracting partners is aligned with the goals of the cooperation. In such relationships, the threat of termination can be sufficient to ensure performance. The fact that many respondents are aware that others in their line of business will know about their interactions with partners was important to make sense of businesses’ significant concern with their reputation. Respondents found it important to mention that they, and their business partners, operate in small communities where “everyone knows everyone else.” Moreover, mobility of employees within industries ensures that executives’ and managers’ behavior toward insiders and outsiders becomes publicly known. Performing on one’s obligations, whether written or informal, is important for maintaining reputation in one’s network of industry contacts. Maintaining friendly ties with businesses across industry boundaries is important to capitalize on critical market information or ideas. The fact that these businesses, as much as those in the non-innovator group, pay so much attention to reputation and qualities such as honesty and trustworthiness in choosing their contracting partners in the first place speaks to the role of these informal mechanisms in securing contract compliance.

So people think basically that if you act according to expectations and the agreement, then you’re a good company, and if you breach

it, you're not a good company. It doesn't matter if you end up going to court or not, I mean, it just matters that you didn't keep your promise. (online expert knowledge platform)

...if we misuse [Company A's] or [Company B's] IP, nobody is going to trust us or give us anything and we will be gone. You have to have [...] trust. The disastrous scenario is that [our partner] goes to our mutual customer and in order for the mutual customer to get their chips done, they need [our] and [our partner's] engineers in the room working together. If they go to [mutual customer] and they say "you can't let any of [this company's] people in the room" and [...] if [our partner is] able to say" let us show you what happened - they stole our stuff" ...if they have a moral argument that [the mutual partner] can't disagree with, [our mutual partner] would say "ok, I get it, we have to kick them out and take their competitor [instead] because they are not trustworthy and I can't force you to compromise your IP."(semiconductor company)

3 Existing accounts of incomplete contracting: Explaining what we heard?

Like Macaulay's businesses of a half century ago, all of the companies we interviewed manage their critical external relations with a primary reliance on relational tools to enforce and adjust their deals. The difference, however, is that when those external relations are important for innovation, we find that at least in some cases formal contracts are the focus of intense design efforts up-front and are consulted extensively in resolving disputes, even though they are not made the basis of actual or threatened litigation. The fact that companies with innovation-critical external relationships report that they sometimes devote resources to the creation and interpretation of formal contracts but rely on informal enforcement of contractual commitments is a puzzling phenomenon. Why would the businesses we spoke to use formal contracts if a formal enforcement threat is rarely employed and is rarely credible? If contracts are not used for formal enforcement, then what good are they? We have not seen evidence that this departure from the well-known Macaulay picture is a secular change in attitudes towards contracting; the

businesses that disavowed the label of ‘innovative’ told us what Macaulay’s respondents told him: our important external relationships are structured without any significant role for formal contracts; we don’t use them to either plan or manage our relationships. Although our sample is small and thus we cannot make general claims about the frequency with which formal contracts are used by modern enterprises, innovative or otherwise, we have clearly identified instances of a puzzling phenomenon that appears to arise in the context of innovation-oriented relationships.

How well do our existing theoretical accounts of the role of contracting in organizing economic activity in the presence of major obstacles to complete contingent contracting explain what we heard in our interviews with innovative companies? We consider here three major lines of analysis in the contracting literature, two well-established and one relatively new.

3.1 Ex-post negotiation and contracting

In general, as Simon (1951) first analyzed it, the problem of incomplete contracting arises because things change between the time of initial contracting and the time of contract performance. Put most generally, at the time of contracting the future state of the world—and hence jointly-optimal actions for the contracting parties—is unknown. If complete contingent contracting is not feasible, *ex ante* efficiency generally cannot be attained. One approach to analyzing the role of contracts in this world of incomplete contracting is to emphasize the potential for *ex post* re-contracting, at a time when the contracting parties are symmetrically informed about what actions would be first-best and able to write enforceable contracts directly over action choices (Grossman and Hart 1986; Hart and Moore 1988, 1990). In such a setting, parties contract *ex ante* over verifiable aspects of a relationship, such as whether trade occurs at all and at what price or who possesses residual rights to control an asset, with an aim to structure the *ex post* re-contracting game by manipulating threat points. *Ex post* efficiency is then achieved through enforceable contracts that implement actions that are jointly-optimal in light of *ex ante* investments.

Our interviews are not, of course, a test of this theory of the role of incomplete contracting. Our interviews were conducted against the backdrop of whatever *ex ante* structural choices our contracting parties had already made; that is, we can presume that any available efficiencies to be obtained through the type of asset ownership allocation and integration decisions emphasized

in this literature had been exhausted. What is revealing about our interviews is the emphasis respondents placed on the *barriers* they perceived to *ex post* negotiation and re-contracting. It was very clear that at the time of initial contracting, the parties who described innovative relationships to us often felt they knew little about what it would be best to do in the future. They anticipated that each of the contracting parties would learn more privately as the future unfolded. But, they reported, sharing information with a contracting partner *ex post* is potentially very costly; there are lots of reasons, they indicated, for continuing to withhold information even if it would improve *ex post* decision-making. One source of such costs is somewhat mundane: engaging in ongoing negotiations and recontracting burns time and money and generates delay; with complex interactions and many dimensions of uncertainty, it is simply not worth discussing everything. More fundamentally, however, ongoing uncertainty about the durability of the relationship makes it costly to reveal one's thinking as private information about the costs and benefits of the collaboration accumulates, particularly relative to alternative opportunities such as taking a piece of the currently-contracted work in-house or adding it to the scope of the collaboration with another contractual partner. Our respondents painted a picture of a complex communication terrain post contract-formation, attended by substantial concerns about sharing private information. (Additional examples in each section are provided in Appendix B.)

[I]t is infrequent that [when] you take [the contract] out of the drawer [that you] then talk to the other party about it. Because you would not want to tell the other party that you are evaluating your obligations. I frequently analyze the contract [to determine] if something we are considering doing complies with our relationship but I won't talk to the other side about it. There is no upside; there is no benefit in telling them; there is little benefit in one telling others "I am considering divorcing you - I am considering other options." What would be the upside? It destabilizes the relationship. (internet portal)

At the same time, our respondents also indicated that as relationships developed, problem-solving negotiations to improve contract terms did occur with some frequency (as in Mayer and Argyres 2004). And, notably, an important spur to engaging in the costly process of sharing confidential information and re-negotiating or adding terms to a written document was to

avoid misunderstandings about obligations that might threaten the stability of the relationship and not (merely) to fill in the details to secure efficient performances once uncertainty was resolved:

You can have an honest disagreement that if you read [the contract] rationally, well I understand why you disagree. Well I gotta figure this: you're a good customer, you're a good distributor, you're a good partner, okay. Well let's come up with something, let's extend the terms, let's change the royalty rate, let's do this, let's do that. Or come up with something that we both win-win. You know, I want to keep the relationship, I don't want to blow it up over this, and you don't either. But I understand that you've got a problem with it, and it's not working for you. Or vice versa, it's not working for me. (optical systems)

We read this evidence to indicate that *ex post* re-contracting and negotiation is potentially at least as problematic as *ex ante* negotiation and contracting in the relationships our respondents described. Sharing information about the state of world, options and possible actions may be very costly: disclosures may threaten to disrupt cooperation and the building of trust if misinterpreted (or not) by the other party; disclosures also risk the loss of competitive secrets, particularly given the weakness of formal protections available through non-disclosure agreements and trade secret law. Moreover, when *ex post* negotiations do occur, these respondents tell us about a relational role for revising a written document that appears to go beyond filling in detail as uncertainty is resolved.

3.2 Relational contracting

A second branch in the literature focuses on a role for incomplete court-enforceable contracts in supporting non-contractible agreements in a repeated game setting. Applying the Folk Theorem (Fudenberg and Maskin 1986), early contributions demonstrated the feasibility of informal agreements in which a worker agrees to supply formally non-contractible effort in exchange for the payment of a formally unenforceable bonus (Bull 1987; MacLeod and Malcomson 1988, 1989; Baker, Gibbons and Murphy 1994). These papers introduced the innovation of modeling self-enforcing “relational” contracts as equilibrium trigger strategies in a repeated game: a deviation from the

informal agreement is punished by termination of the relationship or reversion to the lower returns available from an incomplete formally-enforceable agreement. Later contributions in this literature have explored the potential to use the terms of formally enforceable reversion contracts to improve the results obtainable with relational contracts (Bernheim and Whinston 1998; Baker, Gibbons and Murphy 1999, 2002, 2011; Levin 2003; for a review see MacLeod 2007).

This branch of the literature presents a decent account of the types of relationships we heard about from our innovators. First, it generally focuses on a period during which *ex post* negotiation and recontracting is not possible, a characteristic of the situations described by several of our respondents. Second, it is clear that our respondents are relying on the type of reversion incentives in repeated games that the relational contracting literature emphasizes: as we noted above, many of our respondents highlighted the option to terminate (and then badmouth) a contracting partner who was perceived to have breached an agreement that realistically was, in large part, formally unenforceable.

We did, however, observe evidence of a few important dimensions of relational contracting that are not currently captured in the literature. First, it is generally assumed in the relational contracting literature that continuation values are common knowledge. We heard evidence, however, that those involved in innovation-critical relationships are keenly aware that the success of their contract depends on both partners maintaining a belief that the contract has a high expected continuation value relative to alternative options and that this critical variable is a matter of considerable uncertainty.

Typically you're looking at the long term value. If it's short term you don't really know what the value of the relationship is going to be long term, you haven't had the time yet to learn. So the example: you go out on a date, you don't really know in the first month if this is somebody you want invest the time in. Right? If you have a customer that comes in, it's the first time they've ever used your product, you don't know if they're just going to use it, and they're gonna dump it, or they're going to keep using it. So you really can't assume . . . (optical systems)

A second key feature of innovation-critical contracts, but underdeveloped in the existing relational contracting literature, is the extent to which the

terms of both formal *and* informal contracts are left open and ambiguous. Existing models assume that courts are able to judge whether verifiable terms have been breached and this is what makes formal contracts effective to implement relational contracts. Variables that are not verifiable are nonetheless assumed to be capable of unambiguous specification in the terms of a relational contract, so that it is common knowledge what constitutes a punishable reneging on an informal agreement. As others have also emphasized (Gilson, Sabel and Scott 2009, 2010; Scott and Triantis 2006), however, parties in innovative relationships face substantial uncertainty about what it will be optimal to do in an evolving and ill-defined collaborative venture. As a consequence, we see in innovation-oriented contracts widespread use of ambiguous and open-textured terms such as the following⁴:

[The parties] agree that they will conduct the Research and Development Plan on a collaboration basis with the goal of commercializing Products.

Pricing is subject to negotiation if 100% raw material pass throughs result in an uncompetitive situation.

[Party] shall use reasonable commercial efforts to ensure adequate manufacturing capacity and sufficient supply of the Products during the Term.

[Parties] shall in good faith use their best efforts to develop jointly a plan to ensure continued Product supply.

Our respondents also spoke about the ambiguity and incompleteness of their formal written agreements.⁵

You can't [specify required performances] because you don't know. You can't. You can say things like: best efforts, good faith efforts, I'll put this many people on it, but... that's all [the contract] can do. And if you're trying to do more than that, then those people

⁴Sources and more extended excerpts from the contracts referenced below are provided in Appendix C.

⁵We did not collect contract samples from our respondents, but we feel quite confident that they would contain terms that look like those above. A major obstacle to this kind of empirical research is the reluctance of commercial parties to discuss the terms of their important contracts. We were able to get as much from our respondents as we did because we did not press them for specifics.

won't sign it. "We've gotta do exactly this? What if that's the wrong thing? Who wrote this?" (online collaboration platform)

Even apparently crisp terms may be ambiguous in practice, as they are modified by implied terms and interpretation. An apparently plain statement that a party will dedicate a team of 4 people to sales events, for example, or turn around orders in 3 days, may—in context—be interpreted as requiring those actions only conditional on ambiguously defined states of the world or other behavior. Moreover, even a clearly worded contract is subject to the application of relatively open-ended doctrines that can change the effect of contract language. For example, breach authorizes the other party to terminate the relationship, but only if the breach is deemed material or the term breached is interpreted as a condition. Whether a party will be relieved from contractual obligations by an upfront mistake or later appearing changes in circumstances will often depend on a complex factual inquiry into how the parties allocated risk and/or a complex policy analysis of optimal risk allocation. And, in repeated interactions, the course of performance can be a factor influencing interpretations of terms and a failure to object to a “breach” of even clear provisions can amount to a waiver of the enforceability of those provisions. All of these legal rules make the import of even apparently concrete terms in a formal contract ambiguous.

3.3 Contracts as Reference Points

Finally, we note that an emerging literature has begun to explore the role of contracts as reference points (Hart and Moore 2008; Fehr, Hart, and Zehnder 2008). This line of analysis incorporates a behavioral account of contracting behavior. Specifically, this work proposes that individuals performing an incomplete contract feel aggrieved and hence are motivated to “shade” their performances if they believe that they have not received the benefits to which they are entitled. The terms of the contract provide the reference point for this evaluation. If a contract provides, for example, that a buyer is only obligated to pay a “fair and reasonable” price (thus retaining the flexibility to respond efficiently to late-arriving information about the value of a traded good), then the seller may feel aggrieved if the buyer chooses a low price and may consequently shortchange the buyer on non-contractible elements of quality. The seller will not feel aggrieved, this model assumes, if the low price is contracted for up-front (particularly if the low price is the product of

a competitive market.) The losses associated with agrievement and shading can therefore be reduced by choosing more precise terms up-front, but at a loss in flexibility to adapt *ex post*.

The concept of a contract as a reference point for evaluating post-formation behavior within the gaps of a contract is clearly reflected in our interviews. Respondents reported using the original and modified written documents to manage the tone of their ongoing relationship—keenly aware that with much that is not contractible, even *ex post*, it is critical to keep contracting partners motivated and onboard.

Well, the contract [is] simply the documentation of what we agreed to, and we'll remember what we discussed and agreed to, and if anybody forgets, well this is what we put on paper, right, it becomes a reference document. . . "What did we say about: if we sell the deal here, but it goes to Europe," or something, you know, it would be "what did we agree how to. . . ?" The more likely thing is, "shoot we never thought about this. . . let's figure this out", because we didn't know enough or we didn't anticipate this circumstance. And you've got to, "well, I guess from what we agreed to, it seems like it'd be fair if we did it this way. That make sense to you? Well, wait a minute what about this? Well, ok, all right. Are we good, or do we need to put it in there? Well, we better put it in as an attachment on there." Well that's kind of how these things unfold, because again, both sides, you try to do this win-win. You know if you start doing stuff that's going to mess up the other side, they're going to be demotivated to work with you, so it's in your mutual interest to always keep the other side happy, motivated, and working on your behalf. (online collaboration platform)

The use of the formal contract as a reference point that our respondents discussed could be at least in part responsive to the kind of preferences Hart and Moore (2008) assume—that is, the derivation of utility from imposing costs on a party that is perceived to have deprived someone of a benefit to which he or she believes they are entitled. But in the context of innovation-critical relationships it is not clear this agrievement mechanism can play out as currently modeled in this early literature. The selection of concrete terms up-front to control agrievement is likely to prove challenging given the deep uncertainty about how the relationship will evolve; as we have seen,

our respondents emphasized the difficulty and risk associated with trying to specify precise terms early. Moreover, it seems especially unlikely that the parties can benefit from the psychological balm to feelings of entitlement that is provided by the knowledge that up-front terms were negotiated under competitive circumstances in a setting where relationships are so innovative as to lack any existing map, much less obvious competitive contracting partners of equal quality. But interpreting the contracts-as-reference-points idea more broadly than the particular model currently in the literature, we do see a role for writing formal contract terms to manage the *ex post* costs of disagreement and misunderstanding that does not depend on this particular psychological mechanism. An executive with an analytic database system designer, for example, articulated the need for a written document to structure business reviews and performance assessments with a contracting partner with a well-worn adage: “If a tree falls in the forest and no-one is around to hear it, does it make a sound?” We turn now to an alternative account of the role of formal contracting, one that expands on the concept of contracts as reference points, which we call ‘scaffolding’.

4 Scaffolding: Formal contracting and informal enforcement

Although existing accounts of incomplete contracting capture much of what we heard, there are significant points of departure and in this section we propose a new way of thinking about the role of formal contracts. Our approach does not involve any new theory of incomplete contracting. Instead it rests on a re-interpretation of well-established relational contracting models.

We begin by introducing a distinction that is currently missing from the existing relational contracting literature. This is the distinction between *formal contracting* and *formal contract enforcement*. Formal contracting refers to the use of legal rules, norms, advice and practices to plan and draft agreements and assess performance on the basis of of a distinctive body of contract law. Formal contract enforcement refers to the use of litigation to secure court-awarded damages or reliance on the threat of litigation to obtain performance. As we interpret what we heard from respondents, they were reporting using formal contracting but not formal contract enforcement to govern significant components of their innovation-critical relationships.

What value might there be in formal contracting apart from the threat of formal contract enforcement?

To explore a role for formal contracting without formal contract enforcement, we sketch out a simple relational contracting model.⁶ Suppose two players indexed by i , $i = a, b$, are contemplating a cooperative venture which is structured as a series of repeated interactions over an infinite horizon. In period 0 the parties decide whether to enter into a contract (we specify what we mean by this in a moment) and at the end of every period under the contract each decides whether to continue in the contract or to terminate the relationship permanently. If either player terminates the relationship as of period t , player i expects to collect the present value of an outside option, R_{it} . If both players choose to continue under the contract in period $t > 0$, each player i observes the stochastic state of the relationship s_t and takes an observable action, $x_{it} \in X_i$. Let $\mathbf{x}_t \in \mathbf{X}$ be the vector of observable actions taken by the parties in period t . Together these actions generate non-transferable state-contingent benefits $\pi_{it}(\mathbf{x}_t, s_t)$. This assumption of non-transferable benefits captures the observation from our interviews that once the relationship has been established, *ex post* negotiation to choose actions for the parties is difficult; we assume for purposes of this simple sketch of a model that *ex post* negotiation is completely infeasible.⁷ Without modeling the details, we assume that in each period each player faces an opportunity for improving its own payoff at the expense of the other player, such as by reducing effort or investment or by diverting venture resources into some private activity. This implies conflict between privately-optimal actions and actions that maximize joint surplus and thus a role for an enforceable agreement to engage in jointly-maximizing behavior.

Now consider a contracting environment for this relationship. We assume that x_a, x_b , and s are not contractible in the conventional sense: it is not possible cost-effectively to describe these actions and the state in a contract such that a court can verify performance relative to the contract and impose a penalty that deters (inefficient) breach. This means that there is no *formally enforceable* contract available. But, on our interpretation, this also means there is no self-enforcing relational contract available in period 0 in

⁶We provide a formal description of this model for expositional purposes and to show in detail how our approach relates to existing formal models. It is not our aim to prove any new results in a theoretical sense. Our contribution lies in a novel description of the contracting environment.

⁷See Baker, Gibbons, and Murphy (2011).

the sense that the literature on relational contracting has thus far defined such a contract: as a complete plan for the relationship which specifies optimal actions and payments, contingent on information, for all periods and all histories (Levin 2003). If such a plan cannot be written down for purposes of court enforcement, it is very difficult to conceive of how it can be written down (or implicitly agreed to with sufficient clarity) for purposes of self-enforcement. This accords with a key observation made by our innovator respondents: at the start of the relationship, almost everything is up in the air and any initial agreement is highly incomplete. But by incompleteness we do not mean a complete absence of contract terms. Instead, as we noted from our interviews, initial agreements even under the severe constraints imposed by incompleteness, contain a lot of legal language and structure. But the legal language and structure they contain is not easily interpreted as an *ex ante* plan for specific state-contingent actions, of a type that can trigger (in expectation) a reversion to a punishment such as contract termination. Rather, the terms in these formal documents tend to include significant numbers of relatively vague and ambiguous terms.

We suppose that a contract institution provides a set of terms, including highly ambiguous terms, from which parties can choose a subset to implement in their contracting relationship. Rather than providing *ex ante* readable instructions for conduct for each future period under all possible future circumstances, these terms serve as inputs for the contracting institution in the event it is called upon *ex post* to classify actual conduct as breach or not in concrete realized circumstances. The classification mechanism is not, however, fully determined by the terms chosen by the parties. Classification is instead an implementation of a complete contract logic that is elaborated and maintained in a stewarded way by the contract institution (Hadfield and Weingast 2012). For example, the State of California provides a complete body of contract law and doctrine that can, if called upon and given a set of inputs such as a set of terms, messages, state variables, histories and so on, deploy that law and doctrine to classify a particular action as breach or not breach. Moreover, experts in this law and doctrine—trained as lawyers and members of the California bar, for example—can implement the doctrine so as to classify conduct given the specific circumstances to which the law is applied; classification does not generally require adjudication.⁸

⁸We would expect adjudication only when after the application of doctrinal rules, there is residual ambiguity about how to classify concrete actions and circumstances.

Denote a particular contracting institution K by a set of terms that it offers T^K , and the set of doctrinal rules Δ_t^K , that it has adopted as of period t to perform classifications. These doctrinal rules include substantive rules (for example, implying an obligation of good faith into all contracts), procedural rules (parol evidence rules, for example, which determine when the court can look beyond the four corners of a document to statements made in negotiations to determine its content) and jurisdictional rules (establishing, for example, that a contract is governed by the law of the state with the most significant relationship to the transaction and parties.) We will say that parties engage in *formal contracting* when they adopt a contract that includes a subset of terms, $\tau \subset T^K$. By adopting these terms the parties invoke contract institution K to serve in the future as a mechanism for publicly classifying actions as breach or not breach. We can think of the designation of terms, τ , from a particular contracting institution K as the selection of a family of classification functions parameterized by the public state of the world, $\omega_t \in \Omega$, which consists of the public history of actions and the state of the relationship in all periods up to and including period t , and the state of the doctrinal rules at the time of classification. Formally, let $b_{\tau K} : \mathbf{X} \times \Omega \rightarrow \{0, 1\}$ where $b_{\tau K}(x_{it}; \omega_t) = 1$ if x_{it} is deemed in period t to be a breach of the contract and $b_{\tau K}(x_{it}; \omega_t) = 0$ otherwise. Let $X_{it}^B = \{x_{it} | b_{\tau K}(x_{it}; \omega_t) = 1\}$ be the set of actions that constitute breach (the breach set) and $X_{it}^C = \{x_{it} | b_{\tau K}(x_{it}; \omega_t) = 0\}$ the set of actions that constitute compliance (the compliance set) for party i in period t . Denote an element of X_{it}^B as x_{it}^B and an element of X_{it}^C as x_{it}^C . Let $x_{it}^{B*} = \arg \max_{x_{it}^B} (\pi_{it}(x_{it}^B, x_{jt}^C, s_t))$ be i 's best response in the breach set to compliance by j .

Our claim is that the adoption of formal contracting has value to parties even if they are not able to make use of formal enforcement of the terms of the contract they select. Modifying a definition from Levin (2003), we define a relational contract as a *complete public classification plan* for the relationship together with a plan for what consequences will follow when actions are classified as breach. A classification plan consists of the designation of a contracting institution K and a set of terms $\tau \subset T^K$. We will call this classification plan the *formal contract*. The formal contract specifies, *but only as of period t* , the actions each of the parties should take in period t . That is, prior to period t the parties can consult the formal contract to form beliefs about what actions the contract says the parties should take in period t , but this is not determined in a public (common knowledge) way until period t through the application of the terms and doctrinal rules to the state of

the world in period t . Note that our modified definition clarifies a distinction that is blurred in the existing relational contracting literature: between the content of a formal contract (agreed behaviors) and the specification of strategies. The complete plan for the relationship includes actions that a body of contract law can classify as breach or not, plus strategies for responding to breach; these latter actions are not within the domain of actions that contract law can classify. (Failure to terminate in response to breach, for example, can be a defection from equilibrium strategy but it is not a breach of a formal contract.) A relational contract is then *self-enforcing* for so long as in each period t the actions required by the contract constitute a perfect public equilibrium in the repeated game. In this self-enforcing equilibrium, parties are induced to choose actions from the compliance set in period t and to impose any consequences called for by the relational contract when the other party breaches.

We will focus on a familiar set of simple “grim trigger” relational contracts, in which breach of the terms specifying required behavior is met with termination of the relational contract. (This is consistent with much of what we heard from our respondents: if contracting partners do not live up their contracts, you stop doing business with them.) This is a particularly attractive specification in our context because “terminate in response to breach” is a strategy that can be clearly specified *ex ante*, despite the inability to define *ex ante* what constitutes breach. This leads to a natural reinterpretation of what it means to agree to a relational contract in our sense: *the decision to enter into a relational contract is a commitment to a particular mechanism for determining what counts as breach in future as-yet-unspecified circumstances*. The parties can attempt to control how the mechanism will operate in the future through their designation of a contracting institution with particular doctrinal rules and their selection of a set of terms, but the ultimate classifications reached by the mechanism are determined by other factors beyond the parties’ control.

Contracting parties obviously cannot be expected to compute the continuation payoffs associated with this version of a relational contract, as they can in the conventional model. We assume instead that in period t each party reaches a private judgment about the value of continuing under the relational contract. Let $V_{iK\tau t}^C(\cdot)$ be party i ’s subjective evaluation of this relative continuation value in period t . We do not model the details but assume that in reaching these evaluations the parties take into account the possibility that the contract will be terminated at some future date. As is

well understood in the relational contracting literature, the feasibility of a relational contract depends on these relative continuation values: party i can only be induced not to breach if the payoffs provided by continuation under the relational contract over and above those available from the outside option exceed those available from a best one-time breach, that is, if

$$V_{iK\tau t}^C(\cdot) - R_{it} \geq \pi_{it}(x_{it}^{B^*}, x_{jt}^C, s_t).$$

With this setup, we can describe a simple self-enforcing relational contract. In period 0, provided $V_{iK\tau 0}(\cdot) - R_{i0} \geq 0$, each party i agrees to a designation of a contracting institution, K , a set of terms $\tau \subset T^K$, and a strategy that specifies that party i will terminate the contract in period t if $x_{jt} \in X_{jt}^B$. Then in period $t > 0$ each party i chooses $x_{it} \in X_{it}^C$ if $V_{iK\tau t}(\cdot) - R_{it} \geq \pi_{it}(x_{it}^{B^*}, x_{jt}^C, s_t)$ and $x_{jk} \in X_{jk}^C$, $k = 1, \dots, t-1$ and terminates and takes the outside option R_{it} otherwise. That this plan describes a perfect public equilibrium under which both parties choose not to breach so long as they judge continuation under the contract to be sufficiently valuable is straightforward.

Our claim is that the contracting institution K is playing an essential role in supporting this relational contract. It is serving as a mechanism to coordinate the termination strategy that generates the incentives facing the parties to forego at least some actions—those the mechanism deems to be breach. It does so by bridging an observability problem that has been elided in conventional relational contracting models. Well-known results in the repeated game literature establish that a self-enforcing perfect public equilibrium can be sustained for discount rates sufficiently close to one when the players condition their strategies on information (histories and current state variables) that are common knowledge and there is sufficient identification of different strategies to enable implementation of appropriate punishment schemes (Fudenberg, Levine, and Maskin 1994). In this conventional approach to repeated games, however, it is assumed that the actions or outcomes that will trigger punishment are common knowledge; any observability problems are concentrated on the actions taken and the state of the world. In legal terms, we would say that these models assume that the only possible disputes are about facts (what was done and what the circumstances were) and not about law (what should have been done in those circumstances.) Put differently, it is assumed that all parties concur as a matter of common knowledge about what constitutes “cheating.” But the implementation of equilibrium strate-

gies depends as much on the observability of the definition of “cheating” as it does on the observability of actions and contingencies.

This is the observability challenge that our respondents described in the context of high novelty innovation: it is not clear, particularly at the outset, what actions should be required of the parties in all possible states. Can a contracting partner take another opportunity that might compete with the contractual venture? Decrease investment in the venture in some states of the world? At the time of contracting, the parties we spoke to did not know the answer to these questions, and not (just) because they could not describe the contingencies that would affect payoffs from these actions (Tirole 1999) but (also) because they were not prepared to say. The contracting institution K is serving as a device to answer those questions, drawing on the parties’ own selection of ambiguous terms in need of interpretation in concrete circumstances, as these questions become relevant during the course of the relationship.⁹

This is what we call *scaffolding*. By designating a particular contracting institution and selecting a set of ambiguous terms which are given specific content *ex post* through the application of the doctrinal rules associated with that contracting institution—that is, by adopting a formal contract—the parties are able to bridge the gaps in their incomplete contracting relationship. Figuratively, scaffolding is an incomplete structure that spans the gaps in a relationship under construction, supporting the parties’ efforts to work on the details as it becomes necessary. Ideally, the scaffold allows the parties to reach any part of their relationship and substitute concrete materials for provisional ones. Formally, scaffolding is a set of ambiguous terms drawn from a designated contracting institution defined by its doctrinal rules; this institution then can serve as a common knowledge classification mechanism to coordinate implementation of the trigger strategies that support self-enforcement of a relational contract.

The concept of scaffolding helps us to understand several of the comments we heard from respondents about the value of a formal contract even in the absence of formal enforcement. Several spoke to us of how the terms in a contract provide what one called “guardrails” to help guide relationships in highly ambiguous terrain.

[The contract] creates guardrails for the relationship. It doesn't solve all things but it shows what these parties can do and that's

⁹Additional quotes in each case are provided in Appendix B.

important because there is a lot of uncertainty and a lot of chaos. So getting started on how parties can trust each other: we both know we have risk, so we [use the contract to] create manageable risk profiles for both parties. (high-tech equipment provider)

In other cases that are similar to this I've involved lawyers early, not to actually write things down but to get a sense of what we're trying to accomplish. Because otherwise lawyers tend to write a very generic contract as though we're buying a home, or constructing a home. Instead, I want to get the right kind of lawyer or a lawyer with the right intellect. I want the lawyer to understand that we're constructing a home but we've never built a house like this before; we don't know what the stress on this beam will be until we get there. So, be aware, listen to what the customer is saying, listen to what we're saying and start to think about how we can construct a contract that helps us construct this house. (computer processor manufacturer)

Ambiguous contract terms supported by a shared institution for ex-post resolution of (or at least reduction in) ambiguity also support the capacity to form inferences about the other side's current evaluation of the continuation value of the relationship. We noted that our innovator respondents expressed a keen awareness that their only weapon for punishing defections from the contract is termination; this critical information is largely private information possessed by the other side. The relative value of the relationship under the concededly imperfect contract the parties originally adopted is something they need continually to attempt to deduce from the other's behavior. The contract provides a reference point for doing so; as one of our respondents put it, the contract provides a "litmus test for: do they value us, do they have integrity, do we want to [continue to] do business with them" (business software solutions)? Our respondents noted both that the willingness and process of signing a contract and behavior under the contract conveyed important information, signaling assessment of the value of the contract.

If you have to rely on your contract to enforce the interest alignment that you thought you had, there is probably a bigger problem. Because the other party should be interested in meeting their obligations and if they start [going off] on their own it's because they are getting value from [that]. So when in my experience, one

party determines their value from a contract is decreasing, they are less likely to care about adhering to their own obligations. When their value is high they are very interested in the aligned terms; they want to [fulfill] their obligations but when the value goes down then they don't care as much that the other party is upset. (internet portal)

[How do you build trust in your relationship over time?] You know, you have a little bit of the conversation, you make a judgment about trust, you have a little more of the conversation, and you iterate -well, "what do you want to do and when do you want to do it?" There's NDA's [in place already], but if they're not going to respect the contract here, there's sure as hell not going to respect that nondisclosure agreement. . . (business software solutions)

[The NDA] sets the tone. Let me give you an example. If you are out on a date, will the guy that you are dating open the door when you come into the restaurant or not? You cannot force someone to do that but it is pretty much accepted that the man should do it and if he does not do it maybe it shows that he is not fully ready for a relationship. [... NDAs] are actually pretty useful to get a temperature of the relationship. And I can tell really quickly with an NDA what type of relationship I have, what I am getting myself into. It's more like an indicator. [...] If you work with a Japanese company or the US company, things will be very different. So when you have people who are different, small or large companies, or companies from distant countries, your contracts become a meeting place where you can learn about each other's way of doing business. It codifies a little bit some aspects of the relationship. I am meeting with someone and we are talking that we should work together. If the guy does not send me an NDA then he is probably not that serious about it. But let's say that the person in the other company spends the time to get the NDA, get it signed by the CEO or the CTO. It means that he cares enough about this project to involve other people inside the company. So number one it validates that something is going on; [...] there are a lot of things that you are going to be able to calibrate through that document. (optical telecomm network

solutions)

Halac (2012) presents a model that characterizes the circumstances under which a relational contract can be self-enforcing when the value of outside options is persistent private information. She models beliefs about the value of outside options using common priors and Bayesian updating based on contract behavior. We can imagine a similar model using a contract structure to scaffold belief formation. Our respondents, for example, can be interpreted to express the belief that a party that breaches a contract has reached a private, otherwise inscrutable, judgment that the relative value of the contract has fallen below the benefits from breach and reversion to the outside option. If this is the belief entertained by both parties, it is likely to sustain an even more robust notion of equilibrium. If a party entertains the belief that breach signals a critical drop in the value of the contract to the breaching party, we suspect that there is a broad range of circumstances in which termination is a best response to the observation of breach. (Hadfield and Weingast (2012) model this in a more general model of decentralized enforcement of legal rules.) The contracting mechanism is again essential to this equilibrium, providing a common knowledge classification system that coordinates these beliefs: a party who chooses an action that the contracting mechanism classifies as breach knows that the counter-party can infer that the party has breached in full knowledge of how the counter-party will interpret this, and with full knowledge that this will generate the inference that the party no longer values the contract enough to be expected to comply.

The concept of scaffolding gives us a way of understanding something else we heard about from our innovator respondents: the inclination to engage in problem-solving to elaborate and amend the contract over time.

So I was working with a third-party supplier with a design that we were going to implement into our [own] design. They had a way of going twice as fast as we could go. At a certain point we realized it wasn't twice as fast, but it was three times as much power, which isn't a good thing. Their [folks] said "wait a minute - we did not have to think about power" so the contract served as the outline and we ended up using it as a directional "here's how we should resolve this situation" even though it's not specifically mentioned in the contract." (computer processor manufacturer)

This behavior is in some tension with another observation we made, namely that the parties find it costly to engage in *ex post* negotiations because of the risk of revealing private information or destabilizing trust. In our scaffolding framework, however, we have a way of reconciling these competing pictures of post-formation contracting behavior. As we have emphasized, the relational contract includes a contracting mechanism that is not completely determined as of the time of contracting. This implies that at future points in the relationships, classifications supplied by the formal contract may well depart from classifications that the parties could agree they prefer. Obviously, if *ex post* negotiation is low cost, they can just reach this new agreement, as the line of incomplete contracting literature exemplified by Grossman and Hart (1986) proposes. But if *ex post* negotiation is costly, for the reasons we heard about, then the presence of scaffolding may help to boost the willingness to undertake *ex post* negotiations that the parties would otherwise avoid. The reason is that the benefits of resolving ambiguity differently than the existing formal contract include not only the gains in efficiency available from modifying actions taken under the contract but also the benefit of forestalling inappropriate termination and loss of the entire surplus available from cooperation. Scaffolding here provides a framework for problem-solving and refinement of the contract over time, helping to bridge some of the strategic gaps that exist in the relationship, such as the disincentives to share information or risk unsettling beliefs.

The quality of the contracting mechanism as a scaffold to support the parties' efforts to form and maintain the value of a relationship will depend on many factors, including some beyond the parties' control. Thus the parties cannot design a relational contract in our setting in the way they do in the conventional literature, limited only by the observability of actions and state variables and by the strength of the potential gains from cooperation. Indeed, the content of their contract is only discovered over time. At any point, either party may discover that, as it is filled in by the contracting institution they have selected, the formal contract they adopted is no longer one that they judge to deliver value above and beyond their current outside option. Moreover, at any point, either party may discover that the gains from the contract, in light of its evolving content, are insufficient to effectively deter breach, taking their relational contract out of the set of self-enforcing contracts. Our claim is that we can understand those cases in which parties do resort to employing formal contracting to support innovative contracts as instances in which, despite the significant limits to the mechanism, scaffolding

delivers higher expected returns than the alternatives.

What are those alternatives? Clearly, one is simply not to engage in any cooperative venture. But are there other mechanisms available to perform the kind of role we see for formal contracting? Suppose the parties simply wrote down their incomplete and ambiguous description of their plan for the relationship, without designating any institution as the interpreter of this description. By definition, an ambiguous term is one that is reasonably susceptible of multiple meanings. Particularly when motivated to reach an interpretation that deems an action breach or compliance, it is likely that the parties will entertain (perhaps quite sincerely) different meanings for ambiguous terms (Kunda 1990). This implies not merely costly conflict in expectations about what constitutes contract compliance (which Hart and Moore (2008) capture with their model of aggrievement) but, more fundamentally, an obstacle to the implementation of the enforcement mechanism. Recall that we observed that at least in the cases our respondents described, it is sometimes perceived as costly to raise the topic of whether a contemplated action is breach or not with the other party: this may reveal private information and it may undermine trust. In those circumstances, a party evaluating a potential action is interested in predicting how the other party would classify the action; neither party wants to trigger termination if they continue to judge the value of the relationship to be greater than the value of the outside option. This is the sense in which the parties need to coordinate on the classification of conduct. They probably can do this without a supporting institution for aspects of their contract that have clear and unambiguous meaning—“deliver 10 units of product code XXX on December 21.” But when their agreement is constructed with open-ended terms such as “the parties agree to use good faith efforts to develop a revised development schedule in the event of unavoidable delays” or “the parties agree to use commercially diligent efforts to develop the interfaces,” the confidence either can have in their prediction of how the other will classify conduct in concrete circumstances is, we claim, significantly below the confidence they can have if classification is governed by an institution with established rules for classification.

Suppose, for example, that the parties exchange multiple messages and documents in the course of planning their relationship over an extended period of time. Parties acting on their own may treat any particular plan they wrote down as just one among many sources to consult when deciding whether conduct constitutes breach or not. If the CEOs said to each other

during negotiations “of course, this doesn’t mean we can’t do X” one or both parties are likely to think that the conversation is relevant information for deciding whether doing X is a breach. A contracting institution, on the other hand, will have established doctrinal rules for determining what constitutes a valid source for determining the answer to the question of the relevance of what one CEO said to another. If there is a formal document that includes an “entire agreement” clause, for example, the CEO conversation will not be relevant—unless there is a term in the written document that a court would deem ambiguous and which can be interpreted to mean “we can do X.” Anyone with training in the law of a particular contracting institution will have access to standardized methods for resolving ambiguity, including a prioritization of steps and sources; this makes the classification reached by the application of those models available, and known to be available, to both parties. Even conceding that the application of doctrinal rules to a set of materials can yield residual ambiguity as to meaning, it seems fairly clear that the scope of the ambiguity is much decreased by the appeal to a specialized interpretive mechanism. Moreover, because the institution is public, the parties can coordinate their expectations about how ambiguity will be resolved by each of them. Understanding how very specific doctrinal reasoning works and using it to predict (and predict how other lawyers will use it to predict) the classification of behavior is fundamental to legal expertise.

In the abstract, there is no reason to think the parties could not designate some other institution—perhaps an industry trade group or a professional association of, say, engineers or accountants—to serve as their common classification mechanism. Indeed, this is one way of understanding what takes place in settings that line up with the environment that Macaulay originally studied and which we heard about from our non-innovator respondents. Contracting parties in these contexts can rely on common knowledge of industry standards and norms to predict how their partners will classify conduct. (Indeed, their rejection of lawyerly documents may be a way of signaling that they are playing the strategy of ‘look to the industry standards’ and not ‘look to lawyerly interpretations’ to resolve ambiguity.) But in high-novelty settings such as the ones we heard about from our innovators, we believe there is a reason for contracting parties to turn to formal contract law as a classification mechanism. Law, as Hadfield and Weingast (2012) emphasize, is characterized by attributes that can be understood as particularly well-tailored to the task of coordinating the normative classification of conduct.

Law is self-consciously designed to provide unique, neutral, clear, stable and public classifications. Achieving these attributes is a normative obligation of participants in the legal enterprise (Fuller 1964).

Legal institutions in particular have established procedures for resolving differences of opinion—such as a hierarchical designation of courts that make the opinion of a Supreme Court a trump over those of lower courts. Industry trade groups or other professional associations, on the other hand, can provide expertise but the expertise of these organizations is not stewarded in the way that law is, with recognized means for determining a “final answer.” This makes an important difference in the context of coordinating beliefs about classification.

Moreover, law aspires to be a complete system, capable of binary classification of any circumstances put to it. Law does not answer “maybe” or “we don’t know” or “we won’t say.” There is a rule for how to classify when evidence is weak or incomplete: the plaintiff fails to establish the claim and the conduct is not classified as breach. But a body of experts does not feel constrained in this way; an industry trade group may say “there is a clear expectation that an order for fabric can be cancelled before the fabric is cut” but also say “there is no established practice about how to respond to an order cancelled after fabric is cut.” Professional engineers may be able to opine uniformly on whether steel of a given thickness is acceptable for purposes of manufacturing motorcycle wheels to particular specifications, but may have no opinion on whether a particular frequency of defects in a delivered lot of steel is acceptable.

Law and legal reasoning thus offers contracting parties a relatively complete method of reaching shared, or at least less dissonant, understandings of what counts as breach, even long after a contract is signed and even though the contract was filled with ambiguity at signing. We heard about the value of law as an instrument in this setting when our respondents explained why they bring lawyers and formal contracting into the process of creating and then managing a relationship that few expect will ever end up in court.

Because in the room you would say: “remember [that] we said we were going to do is this, this, this and this. And maybe this and that got further refined by the lawyers but in the end we understood what our relationship was. And you are outside the bounds!” You might say: “we gave you this IP, you said you were going to do this with it and [yet] you did this with it; what were you

thinking?!” In the end you are deciding whether to continue to do business. The reasons you do things on the whiteboard [with the lawyers] is to establish an agreement beforehand that will govern the relationship and you can call each other on it. (semiconductor company)

Finally, although we have focused on the aspects of a contracting relationship that are not amenable to formal contract enforcement, it is clear that when parties generate a formal contract, there are some circumstances in which formal enforcement, and its threat, will be available. Even highly innovative relationships are likely to include some provisions that it is cost-effective to enforce: an agreement to a revenue-sharing formula for products produced by the contractual venture, for example, or a designation of the ownership of a patent. By generating a formal contract and relying on a formal contract institution for classification services for all aspect of their relationship, the parties retain the capacity to resort to formal enforcement when it is cost-effective to do so. For these reasons, we suspect that law provides higher value in some settings as a classification mechanism—and perhaps particularly in innovative settings—than other candidate classification mechanisms.

The key distinction between existing accounts of the relationship between formal and informal contracts and scaffolding that we want to emphasize is this: our account provides a role for formal contracting that is independent of formal enforcement. All other accounts suppose that parties use formal contracts to support informal contracts by exploiting formal enforcement. The Grossman and Hart (1986) asset ownership approach is, in effect, an appeal to the enforceability of formal agreements about who owns what asset to manipulate informal renegotiation; Baker, Gibbons and Murphy (2011) makes this explicit, with their account of the use of formal agreements governing decision rights to manipulate renegeing constraints and thus expand the set of feasible relational contracts. Gilson, Sabel and Scott (2009, 2010), in their analysis of the incentive to “braid” formal and informal contracts are also drawing on the enforcement of formal contracts: in their account, by using formal (but low-powered¹⁰) enforcement of an agreement to participate in an information exchange and dispute resolution regime, a successfully braided contract endogenously generates a level of trust (and

¹⁰By “low-powered” GSS mean reliance damages for breach, as opposed to expectation damages.

practical information about the value of a joint project) sufficient to support the non-contractible commitments that make for successful collaboration in an environment of high uncertainty. Our approach complements theirs in that we too are considering how informal and formal contracting tools may interlace to support commitment in settings of high uncertainty where conventional complete contracting and court-awarded damages are unavailable as a practical matter. But, unlike their approach, we do not associate the role of formal contracting with the use of formal contract enforcement. Thus the formal contracting we envision ranges, potentially, over the full domain of the contractual relationship and is not limited only to what the literature has defined as “contractible” (meaning verifiable and court-enforceable) terms.

5 Conclusion

Stewart Macaulay’s seminal interviews with businesses about their contracting practices in 1963 identified a puzzling phenomenon: businesses in many instances chose not to rely on formal contracts to manage important economic relationships. The puzzle was this: if these economic actors weren’t relying on what we think of as a pillar of the developed market economy—the availability of third-party enforcement mechanisms to secure contractual commitments—what were they relying on to protect their plans and investments? The Macaulay puzzle spurred the development of a robust literature in incomplete and relational contracting, a centerpiece of our understanding of organizational economics. Today this literature has produced sophisticated game-theoretic accounts of the important phenomenon of self-enforcing contracts and provided theoretical tools for understanding the tradeoffs between markets and hierarchies (Williamson 1975) to organize economic activity.

Our Macaulay-inspired interviews reveal another puzzling phenomenon: businesses engaged in innovation-critical relationships making extensive use of formal contracts but still spurning the use of formal contract enforcement to secure their commitments. In addition to painting what we hope is a fairly rich picture of this phenomenon, we have proposed an account that enriches our understanding of relational contracting. Formal contracting, we argue, provides valuable scaffolding to support the implementation of the informal enforcement mechanisms that underpin the efficacy of relational contracts. This can explain the use of formal contracts—and all that goes with that, such as the appeal to legal advisors and legal methods of interpretation—even

in settings where formal enforcement of contracts is weak or non-existent. Our account can be understood as an application of a more general insight, articulated by Hadfield and Weingast (2012, 2013): the function of law is not solely to provide centralized coercive enforcement of rules but also to coordinate decentralized mechanisms of punishment for rule-violations. One of the essential things that law does is to provide public and (at least aspirationally) clear classifications of conduct as being either in breach of or compliance with a rule. Our analysis of scaffolding emphasizes that the efficacy and stability of relational contracts—analyzed in the literature as equilibria in repeated games—depends on the availability of a common knowledge classification system. This, we argue, is what formal contracting can provide.

In addition to providing an account of an important phenomenon, particularly in an economy that grows increasingly dependent on innovative inter-firm relationships and where vertical integration gives way to networks of alliances and collaborative ventures (Langlois 2003; Lamoreaux, Raff, and Temin 2003), scaffolding focuses attention on dimensions of both contract law and organizational design that have thus far been largely overlooked. Law that is well-suited to the scaffolding role, for example, may differ in its attributes from law that is well-suited to formal enforcement. Moreover, the availability of a contracting mechanism with attributes that support the scaffolding role is likely to vary across different economic settings and thus an appreciation of the scaffolding function can contribute to organizational theory. Baker, Gibbons and Murphy (2011), for example, raise the question of whether the absence of formal contract enforcement mechanisms within the firm may undermine relational contracts by depriving the parties of a tool for manipulating the feasibility of relational contracts. Our analysis of the scaffolding role played by formal contract institutions asks: are relational contracts within the firm hampered in a way that relational contracts that cross-firm boundaries are not by the absence of a neutral, comprehensive, stable and public system for classifying conduct and resolving the inevitable ambiguities of incomplete contracting? We leave these questions, together with the development of more formal models incorporating the scaffolding function into relational contracts, for further research.

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Appendices

A Interviews

Largely replicating Macaulay’s strategy in his key (1963) piece, we conducted semi-structured interviews, which took place in person in a wide majority of our cases. In almost 95 percent of the cases, the individuals we spoke to were high level executives who had access to information about the firm’s critical outside relationships and any challenges encountered by companies in maintaining those relationships. In approximately 5 percent of the companies the individual we spoke to was either legal counsel at the firm in question or was an executive with significant legal training.

Table 1: List of interviewed companies

	Company Descriptor	Size (No. Employees)	Self-reported Innovative
1	brake manufacturer	200-500	no
2	shoe producer	–	no
3	motorcycle wheel manufacturer	25	no
4	candy manufacturer	6	no
5	clothing manufacturer	–	no
6	film distributor	7	no
7	undergarment manufacturer	105	no
8	food manufacturer	40	no
9	wireless phone retailer	5	no
10	producer in entertainment	11-50	no
11	plastic bag manufacturer	1-10	no
12	independent film company	–	no
13	laser inspection system manufacturer	51-200	yes
14	optical systems	–	yes
15	internet portal	~250	yes
16	advertising agency	10	yes
17	logistics services	300	yes
18	analytic database systems	<100	yes
19	online service provider	350	yes
20	optical telecomm network solutions	20	yes
21	online collaboration platform	11-50	yes
22	mergers and acquisitions	11-50	yes
23	business software solutions	200-500	yes
24	online expert knowledge platform	50-75	yes
25	film production	>10000	yes
26	semiconductor company	<10000	yes
27	computer processor manufacturer	<10000	yes
28	high-tech equipment provider	~75000	yes
29	semiconductor manufacturer	~10000	yes
30	high-tech consumer electronics	201-500	yes

B Additional Examples

Numbering in this appendix corresponds with section numbers in the body of the text.

2.1.1. Little use of formal contracts in non-innovation-oriented relationships

Most of our customers we do not have contracts with. They just place orders with us and we ship the order... We have general terms and conditions placed in order forms. Suppliers, it's the same - they typically work without contracts... What I have found with contracts, it's a little like computer problems. You can never think of all the possibilities in a contract. A contract can quickly become obsolete because now you are dealing with all this kind of stuff that you weren't thinking of when you wrote the contract in the first place. And so I think a contract works best when it's kept broad enough instead of being so precise that it becomes an impediment to business. (brake manufacturer)

I have very little interest in going forward with any sort of contract with anybody that I remotely trust, because I would rather just agree to a one-pager that broadly outlines the deal. (independent film company)

2.1.1. Perception of the role of lawyers by non-innovators

But I just don't trust the lawyer. I feel when they write anything, it's somewhat generic and they don't really understand what I'm trying to do. And so I end up going through the whole thing. I am paying them to send me something so I can re-write it and pay them to read what I wrote and fix it, and send it back to me so that I can tell them that they did not understand what I was writing in the first place... I shouldn't be doing it but I don't trust the lawyers to do it properly, and they are going to bill me \$10,000 for a stupid piece of paper that is going to sit in their drawer. So we know what the deal is and they either do it or they don't. They either trust me or they don't. (candy manufacturer)

As a general rule, I will avoid legal involvement at all cost, because it is not helping resolve things. It's only there, really, for contracts that are necessary to engage in a job or a business situation or a bank loan, that are essentially unavoidable steps in a business deal - where paper trails need to exist. (independent film company)

2.1.3. Reliance on informal enforcement mechanisms in non-innovation-oriented relationships

All in all, [our choice of a contracting partner] was based solely on our take of them and we thought they were reputable and extremely skilled. And that's what we needed but I just can't see how you would write a contract on that. (motorcycle wheel manufacturer)

It's really the good old-fashioned way—I have to make a judgment call on how reliable the person is. (brake manufacturer, asked how he ensures his partners in China do not use his technology and training to supply his competitors)

I am, for better or for worse, gravitating to the people that I trust so that I don't have to get into these convoluted legal relationships that are so unenforceable and fraught with misinterpretation. (independent film company)

2.2.1. Significant reliance on formal contracting for innovation-critical relationships

We give our client a contract to sign. We have an investigation period where we find out and go through all the discovery of what we are going to be doing, and how they want us to do it. Then base the contract on all of that information. . . I think because it's just the comfort of knowing that both parties are protected by a contract. And if there's going to be a dispute, there is something to fall back on other than an e-mail. . . being more formal in a lot cases still is better in the thoughts of people doing business with us. (logistics services)

We have partnerships, relationships with distributors and we have important economic relationships with other service providers whose

services are included in our [. . .] products. . . they have an extremely high legal content. (internet portal)

It's the precision of the contract [that we find valuable]; it's the imprecision that leads to the controversies. . . it comes down to the same thing: clarity and definition (M&A consulting services)

I don't want to do business without a contract. . . If you're going to invest in something, even if we are putting our time into it, I have to understand who is going to own what and how it's going to be. . . how the future rights are going to be handled. . . I mean if you're just selling something, then I guess that means the UCC applies. There's a commercial code and you know, you could imply the terms. But when you're doing innovation and the kind of stuff we do, often there's no pattern for what you're doing before. So you need to have some kind of agreement. . . particularly if there's a lot of money involved. I mean sometimes these ideas like I said the one that was millions of dollars, we have another one that we've generated 3 million dollars of royalties on it, it's all documented, there's 3 amendments to that agreement. (optical systems)

So the contracts have agreements about what you're going to design, what the parameters of the design are, what the delivery dates are, what the cost is to the companies. And they also have conflict resolution paths (they do or they don't), they have agreements about how you're going to program manage this, how are you going to track the dates, who in the companies is going to communicate, are they going to live together in the same place, because you're trying to collaborate and try to innovate together. How do you embody that in a contract safely? The contract gets you to anticipate the actual specifics which you're supposed to deliver to an n-th agree and what happens if you don't agree or don't deliver. What if things change? That's where contracts can be good or bad. (computer processor manufacturer)

2.2.2. Formal contracts frequently referenced in solving problems in innovation-critical relationships

The contract is effective because it shows direct consequences of inaction. When I have a problem, first thing I look at is [liquidated] damages, what am I responsible for here. The contract is an operational document that lets everyone know how they can proceed. . . it is the basis for business reviews and performance assessment. (analytic database systems)

. . . I just refer to the contract first because that was our guiding principle basically. Especially when we get a little bit more customized, because that's what we agreed upon. And you know. . . hey, we both signed off on this and that's what we are supposed to do. . . The whole reason I am putting emphasis and the time and effort into that contract in the first place, is that I can rely on that if I have to. (laser inspection system manufacturer)

I would use [the contract] as a reference document. It wouldn't be [that] I never go back to these things, [that] they are in a file drawer. I dig them out when I have to, when there is some reason: what did we do? I can't remember, what did we agree to? Oh, that's what we agreed to. All right, well that's the deal. Get on it with it. (online collaboration platform)

It's not infrequent that we have to do something; we have to change something as time goes by; we change a term or something. . . But we would say. . . we would reference the contract. I mean you won't just write a letter in vacuum; you are going to reference it. . . (optical systems)

[Contracts] are frequently revisited to understand your own obligations and the other party's obligations. . . I would frequently analyze the contract if something we are considering doing complies with our relationship. . . (internet portal)

Every time someone comes and says to me, I think we need to terminate this relationship, or revisit this relationship, or assess this relationship, the first thing I do is look and see, what is the relationship? Not just what someone says it is. I want to read what we agreed to, whether it was two months ago or twenty years

ago. That's what's really important - you pull out the contract, so you would refresh your memory. (business software solutions)

[To resolve a problem do you reference contracts?] *That's the first thing we do. When you're sort of qualitatively disagreeing, that whole kind of he-said-she-said discussion, you have to go back to the contract and see what the words mean to [resolve] the discussion.* (high-tech equipment provider)

[When do you pull the contract out of the drawer?] *When you find a bug/error in the processor - who's responsible for that? When they're late in delivery do you get a reduction in some of the fees? When someone comes after you for IP/patent infringement, if it is in [company B's] processor - who pays for it? Do we or does [company B]?* [Do you reference the contract if you're thinking of pursuing a new direction or getting out of a relationship?] *Absolutely. What can I get away with, yeah. How can I reduce my commitment to this venture? We agree to pay a certain amount; can I break the contract? How much does it cost to break the contract? Things change, or there's a better provider that costs less and you've made a long-term commitment and you try to get out of that long-term commitment.* (computer processor manufacturer)

2.2.3. Reluctance to use formal enforcement mechanisms in innovation-critical relationships

[N]othing would cost enough to make me go sue somebody. (laser inspection system manufacturer)

... okay [suppose] I have an individual, an employee, who signed an NDA [non-disclosure agreement], right? So we start a legal process. Now I am running lawyers, and they say, well, what are your damages? Well, I say: I don't know, the damages are all going to show up a few years from now, and they are going to go to the competitors, then they got to make it, get it out to the market... so that gets very murky. And on a practical level, let's say it costs me three hundred thousand dollars. Well, my ability to get these thousands of dollars is for me tenuous, so very quickly,

you do the first few, and you realize it's way too much. . . (business software solutions)

The fundamental problem [with litigation], and again, this is very much a Silicon Valley perspective, is: the things that delay you are as bad as the things that don't happen. They're kind of equivalent. So, the minute you open litigation, you've put in this time delay. [Moreover] if [your customers see you involved in all kinds of legal problems, they start to wonder] 'what's going on?' . . . then they [decide] "I'm not going to do business with them." If somebody views you as high-risk— it's absolutely deadly for small companies to start up in anything to do with litigation. . . (online collaboration platform)

[What is the best strategy for resolving conflicts?] Well certainly not taking legal action - it's not the best way. It costs a lot of money and usually nobody is happy. Seriously, almost all issues of conflict need face-to-face discussion. I find that by far the best, and to make sure I never get [to legal action] in the first place. I feel it's necessary to open discussion: "here is my intent," and if I got to tailor [all the language to] that supplier because it's important enough, I'll do that. But then I have a feeling we won't ever have to use that contract because we [had] agreed, we understood [the terms], and that was something we both agreed to . . . I have a feeling it'd be smoother, not have to go through the legal process if there's a problem. (laser inspection system manufacturer)

The contract is more of an operating manual for the people. For us to go to court would grind things [to a halt]; that would be terrible. (semiconductor company)

The only thing I can say is it doesn't go to court because court is not effective. You can't go to the legal system for something so short-term focused and so urgent. [...] A contract is a terrific outline. Maybe there are things better than contracts. If you could [map out], when people are angry, a dispute resolution path for big companies before you start talking about a lawsuit, nobody will take that to court; people will discover their own ways. In the end, even if it goes up to the CTOs, some conversation happens that

resolves [the issue]. It never goes to court. I have never been in a contract that went to court, even when things went just terribly wrong. Instead, you find a way to resolve it among like minds. (computer processor manufacturer)

[Theoretically, going to court] is always an option, but I think that everybody knows that if it happens, both parties lose. There will be a winner and a loser, but at that point, it's bad for everyone. (online services provider)

I think they know that we're not going to wake up [one day] and go to court. I think if something goes wrong on either side, there will be a business to business discussion. Almost every partner - if we do something wrong or they do something wrong - has understood that it could be a long cycle were we to meet with the lawyers. If it's just a mess and we don't trust them then go straight to litigation. You can, there just has to be a long list of prior bad behavior. (high-tech equipment provider)

We've signed thousands of NDAs over the years, we've had people breach them, and it's usually not worth following it. . . it's just part of the process. (business software solutions)

2.2.3. Reliance on informal enforcement mechanisms in innovation-critical relationships

If either side were to do that [breach confidentiality terms], it would look real bad for them. So it would have ramifications then. You'd very quickly develop a reputation of someone not to do business with. So if this business went south, or it got to where you didn't [want to deal with them anymore], . . . in the end agree to disagree. You don't make a big deal about it, because you know that particularly in business, there's a very good chance that somewhere down the road, you're going to see that company or that person again under different circumstances, so don't burn your bridges, it'll come back to you. (online collaboration platform)

We don't need a contract to have the relationship, to do what we do. We could agree on the terms. What makes these things work

is the alignment of interest. [Company A] wants to promote their [...] product to as many users as possible. [Company B's product] gives them a way to do that. [Company B] wants to offer users choice for different [...] products. [Company A] provides a way to do that. Put the two together so we are both interested in being in a relationship. It's like being married. Are you married only if you have a justice of the peace or a priest sanctify your relationship? There is a commitment that goes beyond the anointing and the allocation of risk in case something goes wrong. (internet portal)

But maybe we go over and above what we need to do to get the job done, even if it is more than what we were contracted to do. We just do it knowing that we really want to serve the client and we want the end the way the campaign or the project ends up is very important to us, so we want it to be the best it can be. So we might go over and above what we contracted to do just so that things have a great conclusion. (advertising agency)

I think choosing the right partner is the most important thing. It's just like interviewing a job candidate - I mean, you can put anything in the contract about how they have to give you this level of service and that - but if you just hired someone who's not that smart, but tried their hardest or something, nothing you put in the contract is going to help that. . . so to me the most important thing is picking the right partner, doing the due diligence to figure out who performs well, who's trustworthy, who's going to stay around, and then it has to work for your business, and then everything after that is just figuring out what the optimal terms might be, and then looking towards the worst case scenario. (online services provider)

It typically progresses up the management chain, the engineering management chain, and then the business management chain. Somehow at the right place, leaders have to stop, or there's a contractual agreement to change and [with] that change you're more or less affected depending on how functional the two management teams are. It really depends on the relationships between the technical teams all the way up to the senior management teams. (computer processor manufacturer)

What we cannot do and never would do, and would be destroyed if we did, is to say [to someone] “oh, by the way, did you know that company A is doing this?” Because engineers move from company A to company B! Another protection this industry has is that you know that when you are talking to company A in a room of engineers, some of those people are going to work at company B so you cannot go to [Company A] and say here is how you destroy [Company B] because some of those people are going to be at [Company B] later and say “you know, those guys [from this company]... they said ... “ The mobility in the industry forces you to be forward on all of that stuff. (semiconductor company)

[Is reputation information valuable ...?] I don't know whether it is a high-tech thing, but most of the information on that is well-known because it is a small industry. I have someone who works with the company and whatever the issue was, there is someone here that has worked with that company who had that problem on that issue. But even when I was in Taiwan, there was a very tight connection, and a tight connection in Japan, about who does what. And we get feedback from our big partners. [They] tell us, hey, you don't want to work with them. They may have their agenda to tell us that, but they also know the partners that you are working with and they understand what their intentions are. (high-tech consumer electronics)

[How is a collaborative product-development relationship with a customer maintained over time?] Well I think it's willingness over time for them to be open about their business needs and sharing and trusting us. So it's a trust relationship... [What is it based on? How is it built?] Time. Like any other trust relationship, it's based on time. And having a history of sharing competitive or crucial business information and keeping it confidential. Having never breached that confidence. It's not something you do 6 months after meeting a company, I mean our customers have been customers for a long time. And they often rely on us now to the point where they share things like that [previously mentioned] problem, sometimes they do, sometimes they don't. (optical systems)

Nobody can or has the time or the legal staff to stop the normal

course of business and spend the time [in courts when there has been breach]. I'm either going to not work with you anymore (one decision people can make) or I'm going to work with you but you are going to have to it make it worthwhile because you just cost me a lot of money. And then the management teams work it out. If they don't, they would just say "I don't want to work with you anymore; I'll go to your competitor" and it gets worked out that way. [And if you are pretty certain that you delivered a good product?] We are not going to make them reasonable and we need to work this out somehow. [We consider:] what is the value of the continuing relationship, how do we keep these teams working effectively? How do we placate everyone and keep moving forward? Maybe I will be able to tell them we got a discount on the next deal or [this company] will make that up to you by giving you this other contract or it is all worked out. The whole game is keeping things moving forward and don't stop to resolve [issues].
(semiconductor company)

3.1. Concerns with sharing private information in innovation-critical relationships

[The process of sharing code under the terms of an NDA] is a behavioral process where communication over time signals a rise in importance of the proposed business. It furthers the relationship and their commitment to share information and further the proposed deal. [The interviewee elaborated that the sharing of information was critical to ensure that partners can capitalize on their joint-technologies by customizing products for the end consumer. At the same time, he explained that neither partner is willing to share information with the other until they detect that the partner is going to commit sufficient resources and energies to the joint project.] (analytic database systems)

3.2. Ambiguity and incompleteness of formal written agreements

Well the contract itself is not for a single instance. It's for a service. So, yeah, part of [the problem] is [that] there are loopholes that exist, so [in] every single instance that contract was not thought through, [that means that] no one has asked the question: well what are we going to do in that situation? How are we going to manage this situation? (film production)

... and we just sat down and agreed on milestones of payments. But the next part of the contract is even harder to manage: what if these milestones don't happen? And what did the buyer have to do in order to show that they did? ... Good faith, is it just good faith? "We agree to act with good faith." [Is that enough?] Probably not. . . . Better contracts . . . might include a marketing plan: "We agree that we will execute this marketing plan or trial plan" and then [the parties] have to document that. And if they don't do that plan, is that then, a breach of contract? So really this next [part of the contracting exercise involves deciding] how far these parties [can] go in defining what good faith is and applicable efforts in achieving those milestones. (M&A consulting services)

The contract might say "you can't use my IP to improve your property." [But] I fixed a bug in my IP. Is that an improvement or a bug fix? It gets pretty fuzzy [How is that fuzziness resolved?] It's really not. It's just an argument at the next contract. "I think we need money from you because I think you were improving your product using our IP which you weren't supposed to do." "No, we were just fixing bugs!" I think this has more influence on the next negotiation. (semiconductor company)

The contract can't embody everything that will actually happen. It's not as simple as buying chairs. If you're buying 500 chairs you sign for it [and it's done]. Here you're developing in real time and problems can arise and you have to solve them. (computer processor manufacturer)

4. Contracts provide guardrails

[Our partner] is a very, very valuable company. They have a lot at stake and when they look at their strategic threats, one of their largest strategic threats is us. It's that we will go into their business and they need to make sure it does not happen while still working with us. In other words, [the detailed contract] makes it very clear where the boundaries are and what's going to be the impact if we do become their competitor and [they] try to keep that from happening. [...] Trust is great but at a certain time, trust is a verified thing, right?! [...] The contract sort of sets the "no fly zone" - don't go anywhere near that; that would destroy us. [The contract] provides a very nice barrier beyond which you cannot go and nobody wants to violate the contract - everybody knows that contracts are absolute. [...] On a day-to-day basis, nobody thinks about the contract. People think about the procedures that were established in the contract and things like that. It gets to sort of an ethical position - you don't want any ethical violations and [...] anything you imagine could be in the contract, you don't want to go anywhere near it. That would be disastrous. (semiconductor company)

[The contract] sets a type of boundaries of what's acceptable and if some people are going too far then the contract is like a whip so say 'hey, you are doing something illegal outside the contract.' Contracts are setting the boundaries but they don't define the relationship inside those boundaries. (optical telecomm network solutions)

It does show intent. And it does define intent. And there is actually, until you start to really go into the contract, you don't really know what you are agreeing to do. So a lot of that process is very clarifying - what you intend to do together and what the boundaries will be. (semiconductor manufacturer)

The contract has to serve in some places to ensure that if things go [wrong], if one side is much more optimistic, the other side cautiously optimistic; that if one side of the other does not [adjust] their expectations, or [their expectations] are not immediately met [...] well, let's put it in one place. So we are kind of defining the

level of effort such that, since we do not really know how things are going to go, we are [going to be] clear on what we are going to put into this to try to be more successful. (online collaboration platform)

4. Inferences about the continuation value of the relationship

For us the primary value of the contract is a guide on how to answer questions about the relationship, but the ultimate remedy for us usually is not, if you breach the contract, then screw you! The remedy is, you breached the contract, and you're not the kind of company we want to do business with. So it's a litmus test for: do they value us, do they have integrity, do we want to [continue to] do business with them? (business software solutions)

The act of signing and committing to each other [is most important] because everything will change in a multi-year agreement. (computer processor manufacturer)

What they will commit to in a contract is indicative of two things. Either ignorance of what contracts are - they don't understand what they are signing up for. Or, commitment to the business. Some guys will be very difficult to work with on a contract and some will want to work with you so badly that they're just giving you the farm in the contract, so they really want to be invested in this. Others, not so much; they're nervous, they're being cautious. So what they sign up to is absolutely indicative [of their commitment]. (high-tech consumer electronics)

We built the foundations of trust; we can see the need for this [relationship]. Typically at this stage, there's the signing of some document called the Memorandum of Understanding and it's something that ... people around the world feel more committed to things when they sign a document. It's a game of learning how far you can trust your partner and building [the relationship] to that degree. (computer processor manufacturer)

The hope would be that you would vet out [their] intent in the process of creating this NDA or the development agreement. During

the process of saying okay, let's put the development agreement together, maybe they come and say "we are actually planning to talk to three other people." Okay, let's talk about that now as opposed to going through subsequent discovery later on. So it helps you think through what the intent of the development idea is. [...] Then at the same time, they may find out something about us too. I think it's their chance to really vet: are we really serious or are we just spinning their wheels; are we willing to put down some intent to manufacture or intent to procure timeline. (high-tech consumer electronics)

If you are in an antagonistic relationship or the company does not see the value in the contract that they thought they would, then you can hold [them] to the letter of the contract. If you are seeing upside to that contract and you are seeing that things are working well, then you will be more flexible. Or if it's a relationship that you know that you [have] to extend in the future, suing somebody or squeezing them is something that might cause retribution later on. (semiconductor manufacturer)

4. Incentive to problem-solve

The good thing is we have this contract because we are trying to legitimately get something done. Both are working together for a major customer and things have [come] to a halt because of [this problem] so we have to fix it. [Our customer] has no patience to bring lawyers into a room - they just want it fixed. Management is heavily incentivized to find a way around this problem. And it might just be done as a one time [thing] - "we are going to do this in order to make this problem go away." The same thing happens when it is us and the end customer [...] for instance. We are working on a project and there's some technical difficulty. "Your tool does not work." "No, no, it works; you are using it wrong." It goes up the management chain, [...] where generally the management's role is to say "ok, there are all sorts of things you can do to resolve this: let's get an independent group of engineers to take a look at it, let's try to accelerate the schedule for this ... " Maybe we think [they're] probably wrong but we just need

to solve the problem and fix it. We don't need to be right. [...] so when there are misunderstandings like [this problem], they are all resolved in the context: what we are doing together is really hard, misunderstandings occur, and we just need to resolve the situation. In six months we will have another technical problem to resolve. The[se] are not sort of you're cheating us or we're cheating you [issues]. (semiconductor company)

Too many times when you do a contract you try to anticipate what is involved in a multi-year relationship in a document that nobody could possibly think through in a multi-year way. The tech progresses quickly, the problems aren't apparent, and you are in the midst of design. So you have to be very careful in the contract not to encourage the exact wrong behavior. There has to be alignment between those parties and that's a difficult thing to craft, especially if you're working with big companies who want security. They want to know that everything you say is true and it's going to be delivered this way, and smaller companies like us have to be light on our feet and realize that we will to the best of our ability perform on our commitments, but we'll come up against roadblocks and when we hit those roadblocks, we'll depend on our quick wittedness to get around it. But what if that violates how we agreed to do it in the contract? The contract is a living document. When you have a multiyear contract you have to realize that things will be changed repeatedly. (computer processor manufacturer)

[In] the agreements that tend to look more like business partnerships, which comes closer to our investor/strategic partner [case], that depends on active participation on both sides to make it successful, one can define specifics, like we will agree to do this many sales seminars, we will agree to provide this level of support with this [...]. So then you do it, 20 people show up and 15 of them look like they have no business being there, and the other 5 are not interested, or they are competitors, or something like that ... So you decide, ultimately it is a result where you say: 'you know, we both worked really hard at this' [or] you could say 'I thought you guys did a great job, we worked hard, it did not work' and then definitely say 'let's try something else.' And you carry on

the spirit [of the contract]. The contract may have said seminars and you end up doing something totally different. But the spirit of it was such that we're going to jointly work to try to [make] business together. And yes, we said seminars, but now we know more, and it's better if we try this other thing. And maybe the third thing you try, you find that solution [...] (online collaboration platform)

Or a lot of times, instead of terminating or amending the contract, we would add terms informally to the contract- a lot of times that's done by an e-mail, and some people would say in legal terms if there wasn't an integration clause, then it's totally fine to add an e-mail saying, hey from now on can you turn this around in 3 days instead of 4, and they turn back and say, yep 3 days is totally fine, we'll do that from now on. If the original contract says 4 days, and they're still doing 4 days, is there really a breach? Some people say yes, some might say no, but if the contract itself is silent whether or not you can change some of its terms whether orally or by writing, then I think you can. When this company was in its infancy, it very much relied on confirming emails, more than formalization of contract. If you tell someone I'd like you to start turning stuff around in 3 days, and then they say okay and they're turning it around in 3 days, and they do so for the next 6, 8, 10 months, and they keep going, to many entrepreneurs who don't find the risk great, that's enough. You don't need to go then and say now that's put that in the contract and we'll amend that term and take care of it. That being said, if that contract has a termination date where it says it will expire on this date, and it's coming close to that date, they'll say we need to sign an agreement again, so they'll take those terms they had informally agreed to and put them in the new one, and sign that agreement. So it's a little bit of a patchwork quilt, but then it's what I call restated, and then it moves forward again with maybe some patchwork, hopefully less. (online service provider)

Well you know, basically we'd put what we call a 'change order' together if the scope of work or if anything changed. and we would present that before we engaged in any new type of work so there is no misunderstanding. You know often times that happens; these

*guy*s are working with a client creatively and they thought they were gonna do one thing when they first started but it changes in some way shape or form. Or the client asks us to do more. Anytime we have a client meeting, there's always a conference report done by the account executive that goes to tell the discussions we've had. And then at the point where a scope of work might change, we actually create a change order that explains how the work is changing and how many more hours it might take or whatever is different from the original proposal and we get the client's signature on that. So that, again, so that we have their approval. You know, those things happen but it's a communication thing. (advertising agency)

Clearly when you do your first one, you don't always anticipate, well, you know, the things that will come out of it and there are lessons learned. So when you renegotiate, it gets to a whole new level of complexity because now you have a better understanding of the downstream impacts of these decisions that you make in terms of the contract, like [when] you realize that you need more exclusivity on this. Or hey, I find out that they could be licensing it to somebody you don't want [them] to or you find out that there may be an opportunity to develop a downstream supply claim where you hadn't anticipated the contract impact [...]. So, all of these things start to come into better focus as you move forward in this. So, as you [are] jointly developing and you realize that you are adding more capability than your partner in certain areas and they are benefitting from it, and you are not getting any cool benefits somewhere else, then all of these things want to be leveled out to what's an equitable contract. [...] I mean there are just a ton of things that when you start into a kind of a new area of collaboration you don't anticipate always the downstream effects and as you negotiate successive nodes or you extend the contracts, it becomes much more complex. The contracts today for [semiconductors] are probably a foot or more paper when printed. (semiconductor manufacturer)

4. Value of law and legal reasoning

The lawyers are really there to codify the business agreement. [...] Essentially [they] fill in the gaps. Lawyers are always good at following up: what does that mean, how do you fully express that agreement... They always come up with very good points: [...] “There is a giant gap over here” or “their lawyers interpreted that line to mean this and our interpreted it to mean this; what do you think that line actually meant” in seven levels of detail. They would say it means this. And then it is back to another negotiation. (semiconductor company)

[Contract] serves as a threat more than anything with real teeth. But it does give you some leverage where otherwise you would have none. Once you have something in writing, then at least there is an intent to go somewhere else; you can have a more fact-based discussion [with them] about what you feel their ability is, legally to do something. [...] It acts as more of a deterrent to prevent [some] kinds of activities and I think by actually sitting down and talking, 1) you have the deterrent and 2) it makes companies think through what their strategic approach plan is for the technology. [...] so going through this process sort of forces you as companies, or organizations, to at least think through that: ... what we want to do here, what you want to do here, what we want to do [together]. (high-tech consumer electronics)

C Contract Examples

The following examples illustrate the widespread use of ambiguous and open-textured terms.

Collaborative product development agreement¹¹

3.1. Scope of Collaboration. *The Parties will work together to research, develop and commercialize Products pursuant to this*

¹¹Collaboration Agreement between Proctor & Gamble Pharmaceuticals and Alexion Pharmaceuticals (1999). Available at <http://www.techagreements.com/agreement-preview.aspx?title=Alexion%20Pharmaceuticals%20-%20Collaboration%20Agreement&num=453531>

Agreement. All such research and development work shall be conducted according to a Research & Development Plan during the Collaboration Term established and approved by the Research & Development Steering Committee pursuant to Article III. The Research & Development Plan will be conducted with the goals of (a) worldwide development of product in Primary, Secondary and Tertiary Indications and exploration of additional indications; and (b) development of efficient and economic processes for manufacture of Product. Procter & Gamble will commercialize Products pursuant to Article V. Alexion and Procter & Gamble agree that they will conduct the Research & Development Plan on a collaboration basis with the goal of commercializing Products.

Supply agreement¹²

Product Pricing:

<i>Year 1</i>	<i>\$6.00/board foot</i>
<i>Year 2</i>	<i>\$5.50/board foot</i>
<i>Year 3</i>	<i>\$4.20/board foot (Target Price)</i>

Sharing of Risk and Reward:

With \$4.20/board foot as the target, both parties agree to share the risk and reward. If \$4.20 has not been reached by the start of Year 3, the difference between actual and target price will be shared at a 50/50 rate. Similarly, the cost advantage below \$4.20 will also be shared. For example, at the start of Year 3, if the actual price remains at \$5.50, Customer's price will become \$4.85, representing an equal sharing of the shortfall. . . . The price agreed to at the start of Year 3 becomes the baseline for future cost reductions and savings credited to Supplier's 10% of value added obligation. . . .

Raw Material Increases:

¹²From a co-development agreement between a foam manufacturer and manufacturer of interior systems for sale to original equipment manufacturers in the auto industry (using fictionalized prices). Used in a case study, *Martindale Foam*, prepared by Hadfield and available on request.

Customer will be provided with documentation that the raw material increases have been accepted by the OEM. These increases will be reflected in the actual price as well as the above mentioned target price. Pricing is subject to negotiation if 100% raw material pass throughs result in an uncompetitive situation. . . .Increases of greater than 2% justify an immediate review with implementation of a documented increase to be agreed to by both parties.

Exclusive distribution agreement¹³

MTI's Duties. *MTI shall use reasonable commercial efforts to maintain adequate manufacturing capacity and sufficient supply of the Products during the Term. Should MTI fail to maintain adequate manufacturing capacity and/or sufficient supply of the Products, MTI and Abbott shall in good faith use their best efforts to develop jointly a plan to ensure continued Product supply, which plan may include, at Abbott's reasonable discretion, Abbott's exercise of its standby right to manufacture the Products under Section 4.12 and appropriate mutually agreed upon Forecast adjustments pursuant to Section 3.3. MTI shall use commercially reasonable efforts to develop appropriate Product Line extensions in order to assure maintenance of market-competitive Products in the Field. MTI shall give due consideration to recommendations from Abbott in this regard.*

Product development agreement¹⁴

3.2 Prototype. *The parties shall use commercially reasonable efforts to undertake and complete development of a prototype model of the Cable System.*

¹³From Exclusive Distribution Agreement between Abbott Laboratories and Micro Therapeutics Inc. Available at <http://www.techagreements.com/agreement-preview.aspx?num=11521&title=Abbott%20Labs%20/%20Micro%20Therapeutics%20-%20Distribution%20Agreement>

¹⁴From Product Development Agreement between Cisco Systems Inc. and Terayon Corporation, available at <http://www.techagreements.com/agreement-preview.aspx?num=29513&title=Cisco%20/%20Terayon%20-%20Product%20Development%20Agreement>

3.3 Joint Development. *As more specifically set forth in the Statement of Work, Cisco and Terayon will use commercially diligent efforts to develop the Interfaces.*

3.4 Development Schedule and Specifications. *The parties will use commercially diligent efforts to prepare a Development Schedule and Specifications for the prototype of the Cable System ("Phase I System") with which the parties will agree to and comply. Each party represents that it is capable of successfully completing its portion of the Phase I System and the Phase I System may be available for field trials by Cable Operators no later than October 1, 1996.*

3.5 Delay. *Should a developing party ("Developing Party") incur delay in meeting the Development Schedule, that Developing Party shall promptly notify the other party in writing of any delay in meeting the Development Schedule hereunder. The parties agree to work together in good faith to develop a mutually acceptable revised development schedule taking such delay into account, and to meet the revised development schedule. However, should the Developing Party fail to meet the revised development schedule, the other party at its election shall be relieved of its obligations under Sections 4 and 6 below upon written notice to the Developing Party.*